

***SYSTEM SCHEMATICS***

**A2000**

**AUGUST, 1990**

**PN-314135-01**



***Produced By:***

**Commodore International Spare Parts GmbH  
Braunschweig, West Germany**

## ***SYSTEM SCHEMATICS***

# **A2000**

**AUGUST, 1990**

**PN-314135-01**

### ***INTERNATIONAL EDITION***

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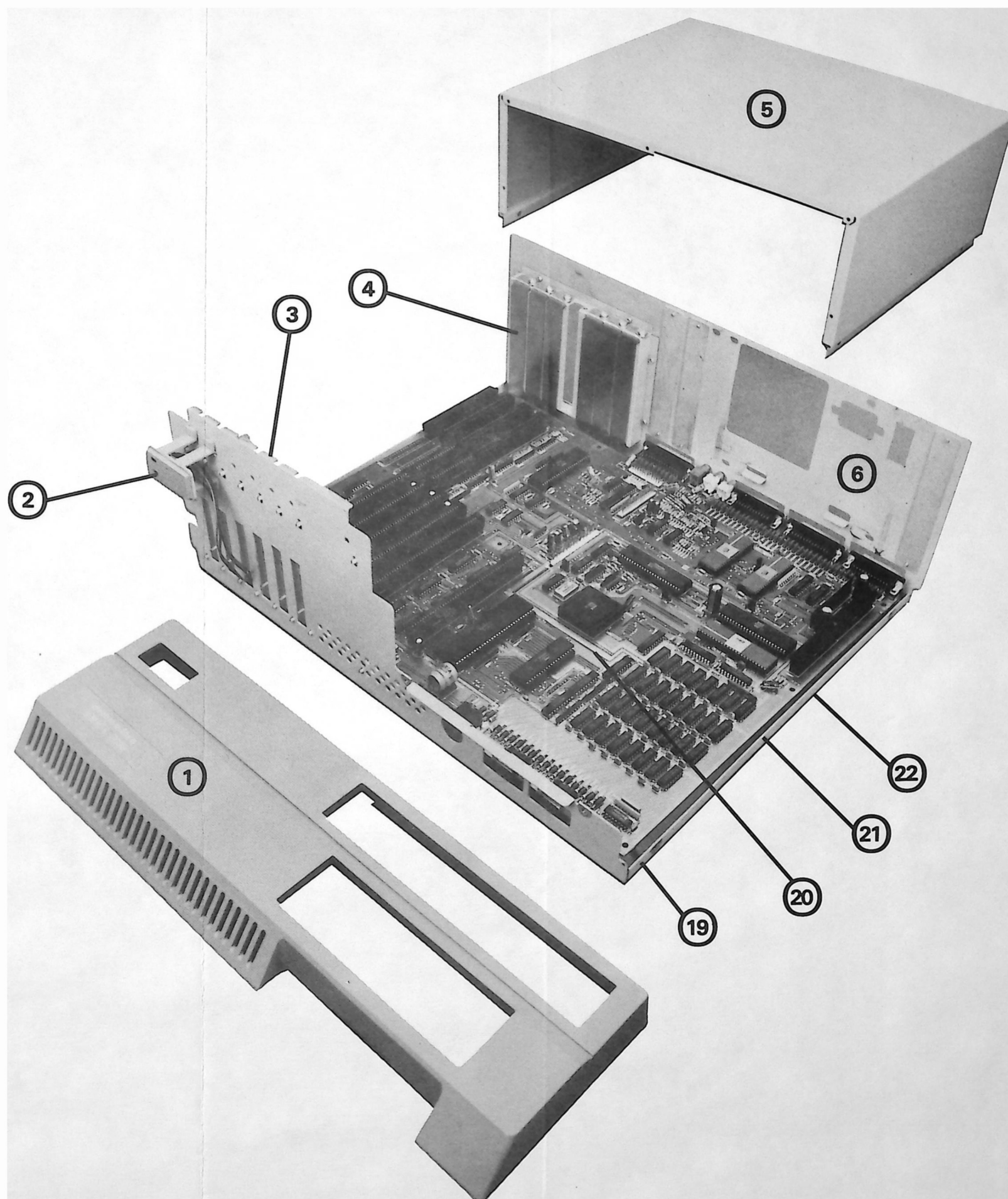
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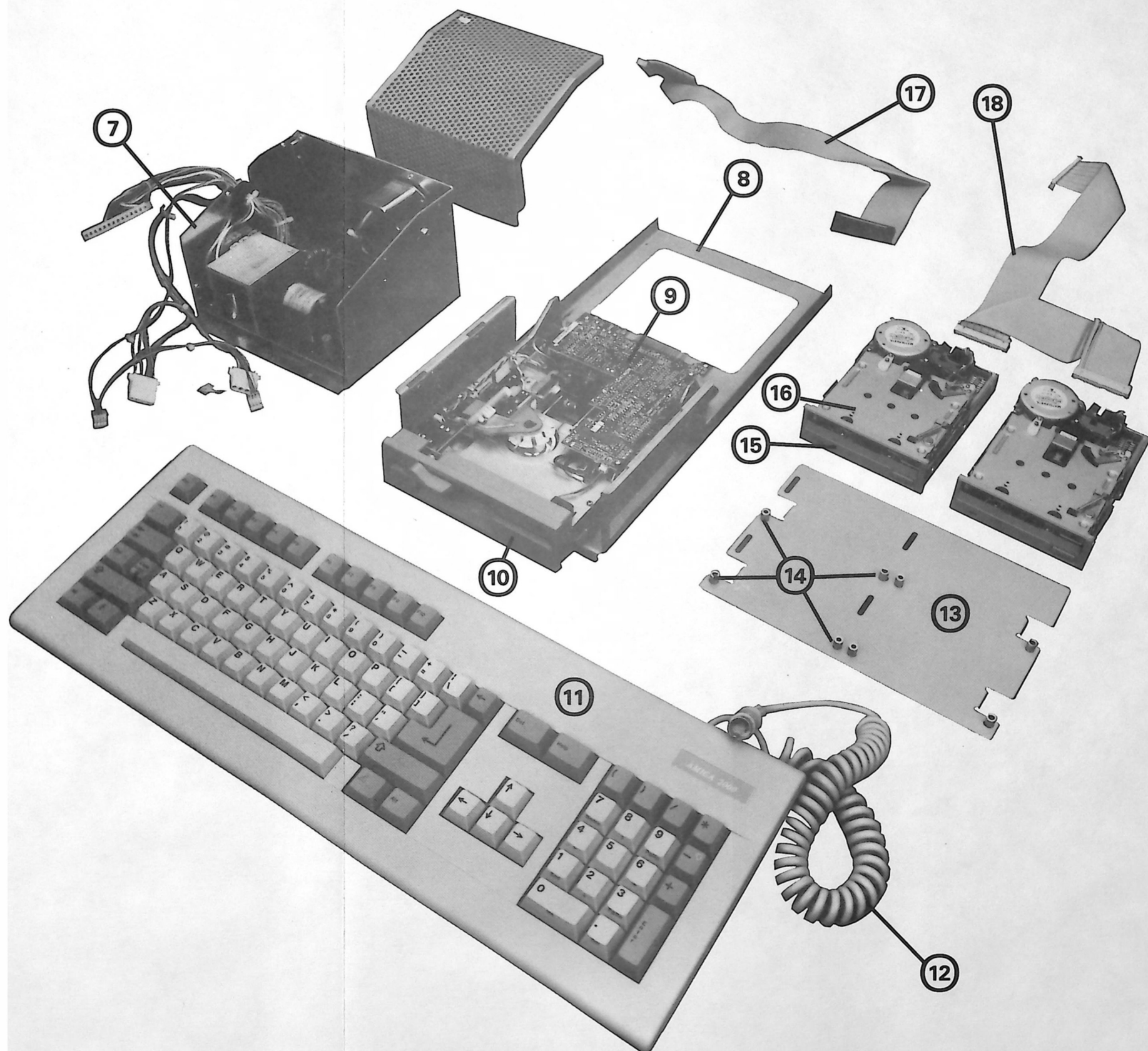
**A 2 0 0 0**

## A2000 MAJOR PARTS LIST

1)	Bezel, Front	380726-01
2)	LED Holding Assembly	380709-01
	LED Power On Assembly	380016-01
	LED Hard Drive	380020-01
3)	PCB Guide	251118-01
4)	Panel, Expansion Slots	380739-01
5)	Housing, Top	380727-01
6)	Housing, Bottom	380728-01
7)	Power Supply Assembly	380708-02
8)	Chassis	380729-01
9)	Drive Assembly — 5.25 ALPS	380111-06
	Drive Assembly — 5.25 CHINON	380111-07 Sub: 06
10)	Cover Floppy 5.25	380736-01
11)	Keyboard Assembly - HITEK	312716-02
12)	Keyboard Cable	380018-06
13)	Sub Chassis	380730-01
14)	Standoff L = 7MM	324271-06
15)	Cover Floppy 3.5	380737-01
16)	Drive Assembly — 3.5 PANA	380752-01
17)	Cable Assembly — 5.25 Drive	380012-07
18)	Cable Assembly — 3.5 Drive	380742-01
19)	Foot, Cork	380128-01
20)	PCB Assembly — A2000 NTSC	312720-01
21)	Insulation Sheet	312717-01
22)	Bottom Shield	312719-01
	Mouse Assembly	327124-03
	Software Assembly	315818-01
	PCB Assembly — 2088 PC XT Emul	380755-01
	PCB Assembly — 2052 2MB Ram Exp	312365-01
	PCB Assembly — 2090 Hard Drive Cntrl	311979-01



# SERVICE PARTS REFERENCE DIAGRAM



# PARTS LIST

## PCB ASSEMBLY #312720-01

**PLEASE NOTE:** Commodore part numbers are provided for reference only and do not indicate the availability of parts from Commodore. Industry standard parts (Resistors, Capacitors, Connectors) should be secured locally. Approved cross-references for TTL chips, Transistors, etc. are available in manual form through the Service Department, order part #314000-01.

INTEGRATED CIRCUITS			RESISTORS — All are carbon 1/4 watt, 5% unless noted		
U100	MC68000 8 MHz	390084-03	RP502	22 OHM x 5 10 PIN	390227-03
U101	FAT AGNUS 8370 NTSC	318070-01	R102,RP201,	47 OHM x 4 8 PIN	902422-05
U101	FAT AGNUS 8371 PAL	318071-01	203,R902,907		
U200	PAULA 8364	252127-01	RP500,501	47 OHM x 5 10 PIN	390227-06
U201	DENISE 8362	252126-01	RP204	68 OHM x 4 8 PIN	902422-06
U102	GARY 5719	318072-01	RP205	120 OHM x 5 6 PIN	902441-10
U800	BUSTER	318075-01	RP503	470 OHM x 9 10 PIN	902410-11
U300,301	8520R4	318029-02	RP802	1K OHM x 5 10 PIN	390227-07
U500	ROM KICKSTART V1.2	315093-01	RP301,607	1K OHM x 5 6 PIN	902441-22
U801	REALTIME CLOCK OKI MSM6242B	318073-01	RP800	1K OHM x 7 8 PIN	902442-22
U501-532	DRAM 256K X 1 15 NS	390026-01	RP601-605, 700-704	1K OHM x 9 10 PIN	902410-10
U304	1488	901882-01	RP801	4.7K OHM x 7 8 PIN	902442-55
U305	1489	901883-01	RP100,101, 200,705	4.7K OHM x 9 10 PIN	902410-08
U107	74F04	390110-01	RP600	10K OHM x 7 8 PIN	902442-35
U303	74F08	390092-03	RP300,900	10K OHM x 9 10 PIN	902410-07
U607,803	74LS08	901521-03	901		
U302,606	74LS32	901521-31	RP903,908	10K OHM x 5 6 PIN	902441-36
U203	74LS38	901521-38	R914	1 OHM, 5%, 1/2W	901600-36
U108	74F74	390081-01	R200,215	1 OHM	901550-118
U802	74LS138	901521-16	R207,208	10 OHM	901550-64
U804	74LS148	901521-86	R209,210	1.2K OHM	901550-17
U202	74LS157	901521-11	R105,106, 212	22 OHM	901550-63
U540,541	74F244	318050-01	R310	47 OHM 5%, 1/2W	901600-15
U205,206	74HCT244	318828-01	R904,905	47 OHM	901550-56
U103,105	74F245	390089-01	R307	68 OHM	901550-94
U600,601, 602,603, 604,605	74LS245	901521-46	R902	200 OHM	901550-31
U104,106	74LS373	901521-29	R110,111, 114,115	330 OHM	901550-14
U204	LF347/TL084	390086-01	R230,240	360 OHM	901550-108
U805	LM339	318827-01	R234,244	390 OHM	901550-57
U805	LM2901	901523-01 sub:	R801,803	470 OHM	901550-58
U900	74F00	318066-01	R233,243, 301,302,311, 312,601-605, 900	1K OHM	901550-01
TRANSISTORS			R213	2.7K OHM	901550-23
Q301	2N3904 NPN	902658-01	R101,104	4.7K OHM	901550-19
Q202,302	2N3906 PNP	902707-01	109,201,300, 308,309,500, 806,807,916		
Q200,201	MPF102 JFET	390252-01	R202,203, 206,211,214, 216,231,232, 241,242,305, 306,800,802, 804	10K OHM	901550-20
Q200,201	PN4302 JFET	390254-01 sub:	R805	47K OHM	901550-22
Q300	2SC945 NPN JAP	902671-01	R204,205	470K OHM	901550-82
DIODES					
D400,401	1N4001	900750-01			
D300,800 801,802	1N4148	900850-01			

## PARTS LIST

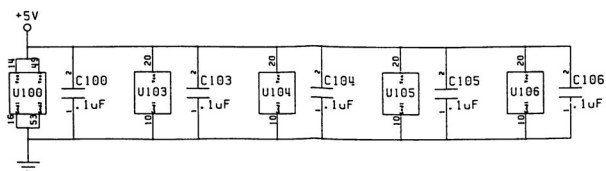
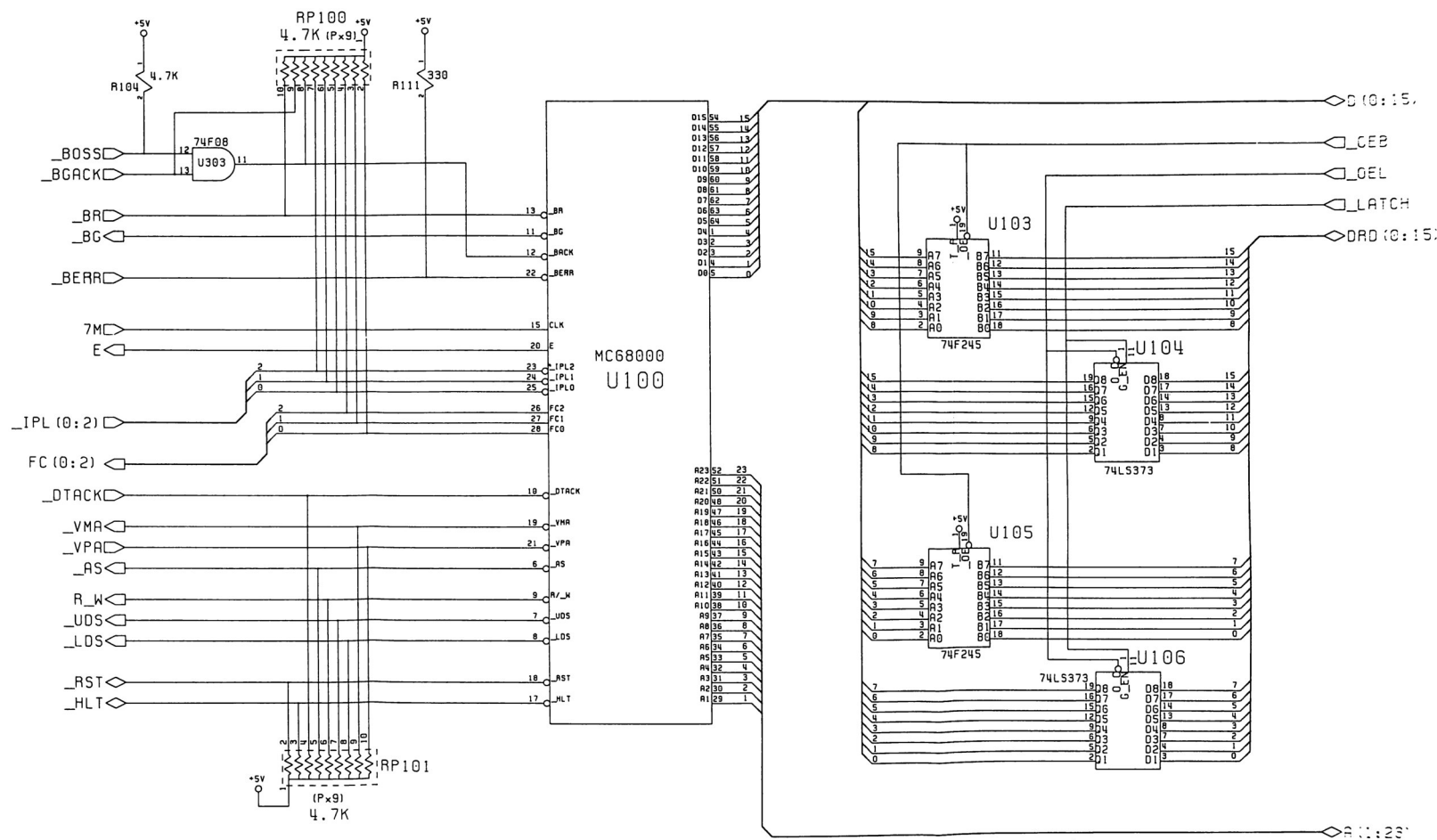
**PCB ASSEMBLY #312720-01 (Continued)**

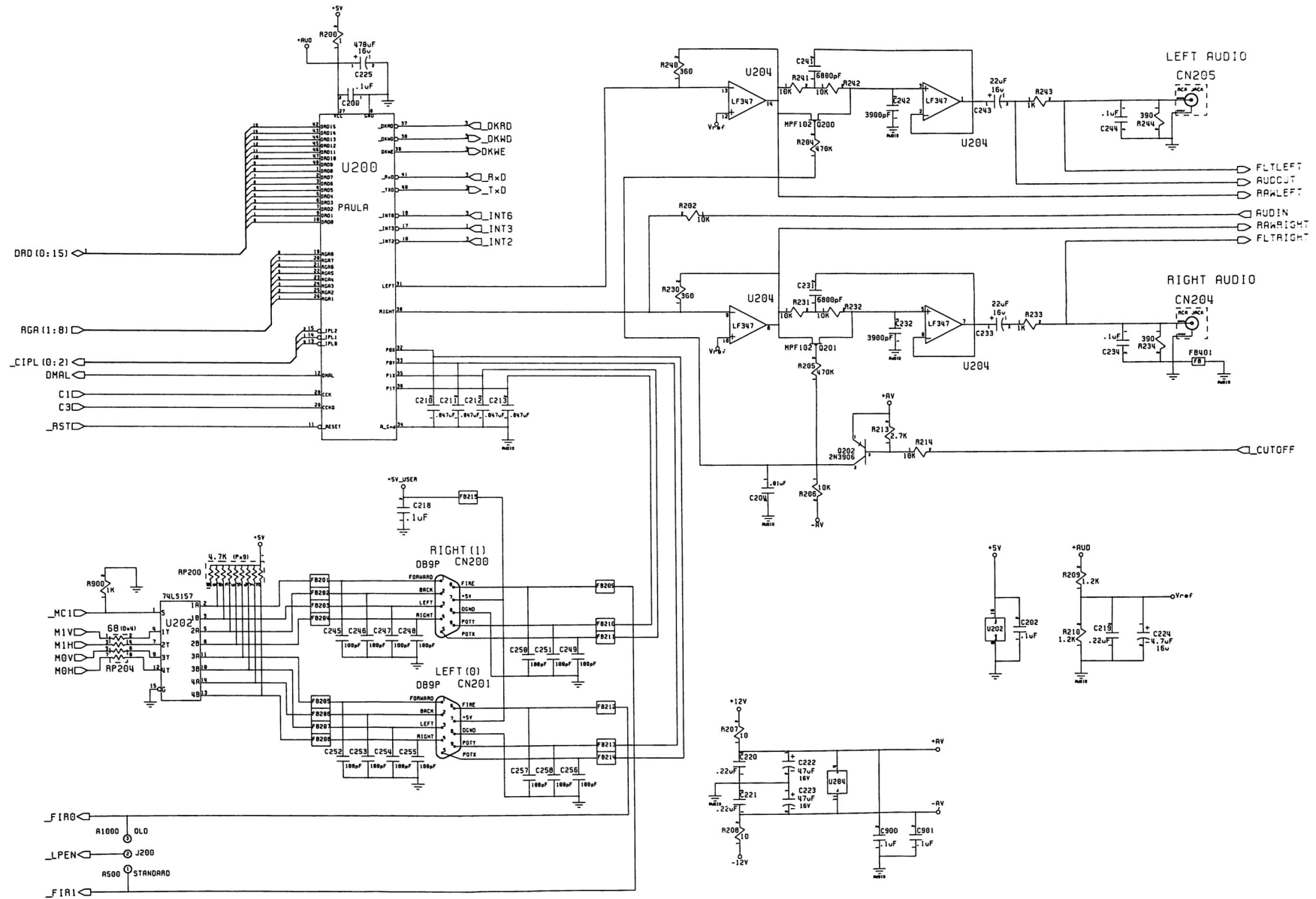
CAPACITORS			MISCELLANEOUS		
C810	20pF MLC AXIAL	900462-21	EMI200,201,	EMI FILTER 100pF	251842-02
C913	47 pF MLC AXIAL	900462-29	206-208,210,		
C245-261,	100pF MLC AXIAL	900462-37	211,229,300-		
903-906,907,			321,325-338		
908,914			FB101,201-	FERRITE BEAD	903025-01
C320,321	470pF MLC RADIAL	900014-05	215,301-303,		
C310-316,	1000pF MLC RADIAL	900014-02	401,903		
617,619-633,			FB900,901	FERRITE BEAD, 1.5 TURN	390253-01
635,637,639,			902		
641,645,647,			EMI209	EMI FILTER	390257-01
649,650-652			J101,200	SHUNT FEMALE 2 POS	390043-01
654,655,657-			300,301,900	0.100	
674,678,711,			HY200	VIDEO HYBRID	390229-01
713,714,716,			X1	OSCILLATOR 28.63636 MHz	325566-14
717,719,720,			X1	OSCILLATOR 28.37516 MHz	252344-01
722,726,728,			Y800	CRYSTAL 32.768 kHz	900560-01
730,732,734,			U300,301,	40 PIN DIP SOCKET	904150-06
736,738,740,			500		
742,744,746,			U102,200	48 PIN DIP SOCKET	251313-01
748,750,752,			201,800		
754,756,758,			U102,200,	48 PIN DIP SOCKET	251313-02 sub:
760,762,764,			201,800		
766,768,770,			U100	64 PIN DIP SOCKET	904150-01
776,778,780,			U101	84 PIN PLC SOCKET	390185-01
782,784,786-			BT800	BATTERY NICAD 3.6V	380393-01
788,790,791,				60MAH	
793,794,796,				POWER SWITCH	C390265-01
910,911					
C232,242	3900pF MLC AXIAL	900463-23			
C231,241	6800pF MLC AXIAL	900463-26			
C204,322,	.01μF MLC AXIAL	390082-02			
323,401,407,					
409,411,413,					
414					
C210-213	.047μF MLC AXIAL	900463-36			
C110,234,	.1μF MLC AXIAL	390082-01			
244,259,812,					
815,900,901,					
909,915,916,					
918,919,100-					
108,200,202,					
203,205,206,					
218,300-303,					
305,540,541,					
600-607,800,					
802-805					
C201,215-	.22μF MLC AXIAL	390082-05			
217,219-221,					
500,700,702-					
705					
C501-532	.33μF MLC RADIAL	900022-05			
C224,415,	4.7μF 35V ELEC RADIAL	390101-05			
811					
C233,243,	22μF 35V ELEC RADIAL	390101-04			
317,318,701,					
813,814					
C222,223	47μF 16V ELEC RADIAL	390101-01			
402,404-406,					
408,410,412					
C402	47μF 16V ELEC AXIAL	390188-05			
C400	100μF 16V ELEC RADIAL	390101-02			
C214,225	470μF 16V ELEC RADIAL	390101-03			
226,912					
C416-419	470μF 16V ELEC AXIAL	390188-09			
VC800	VARIABLE 4.5-45pF	251029-06			



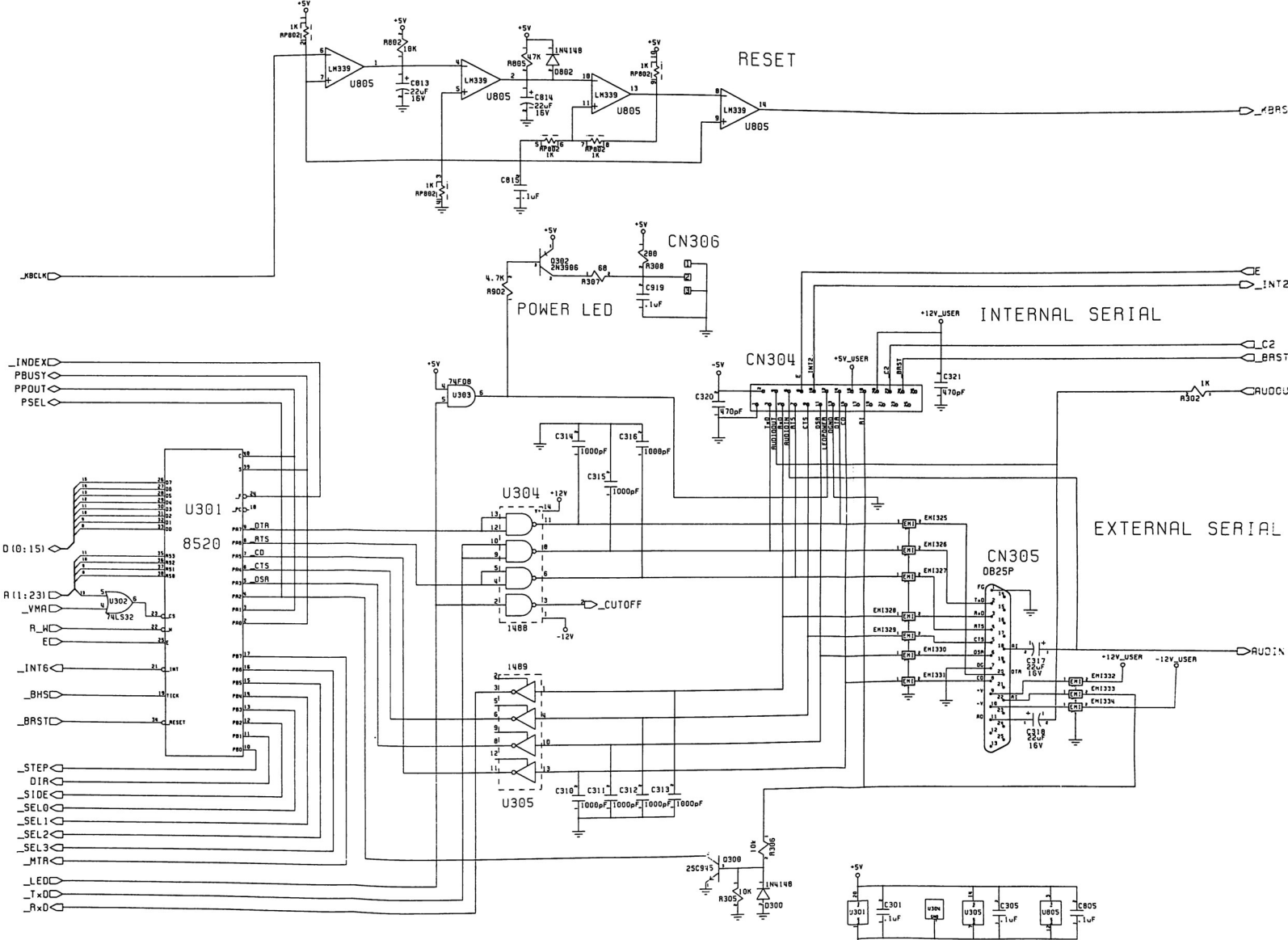


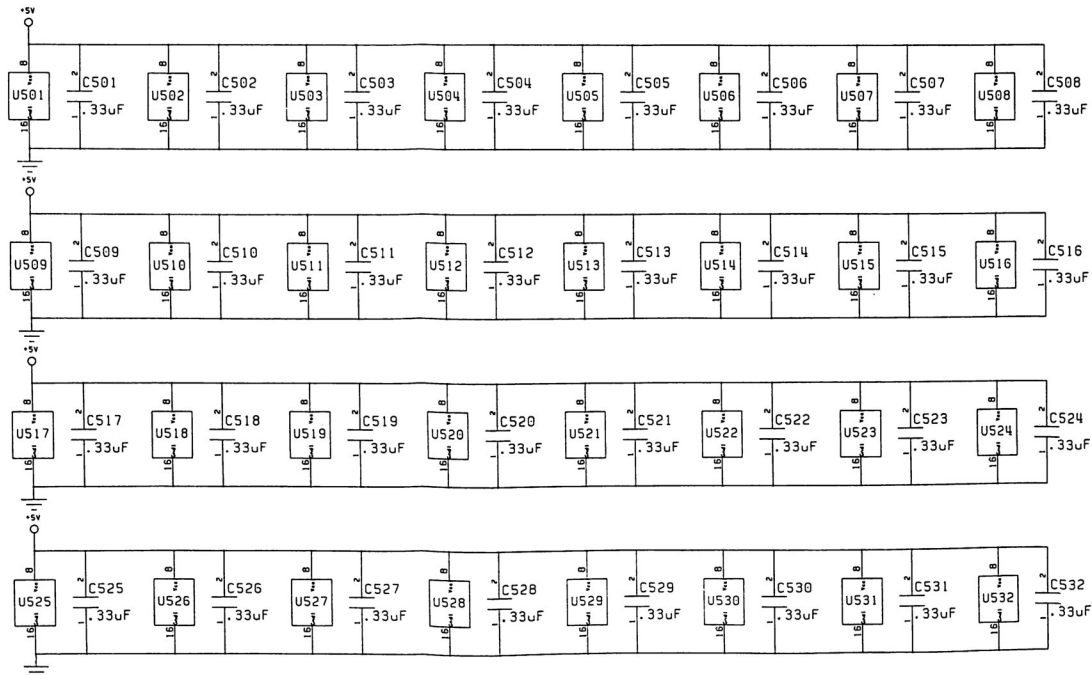
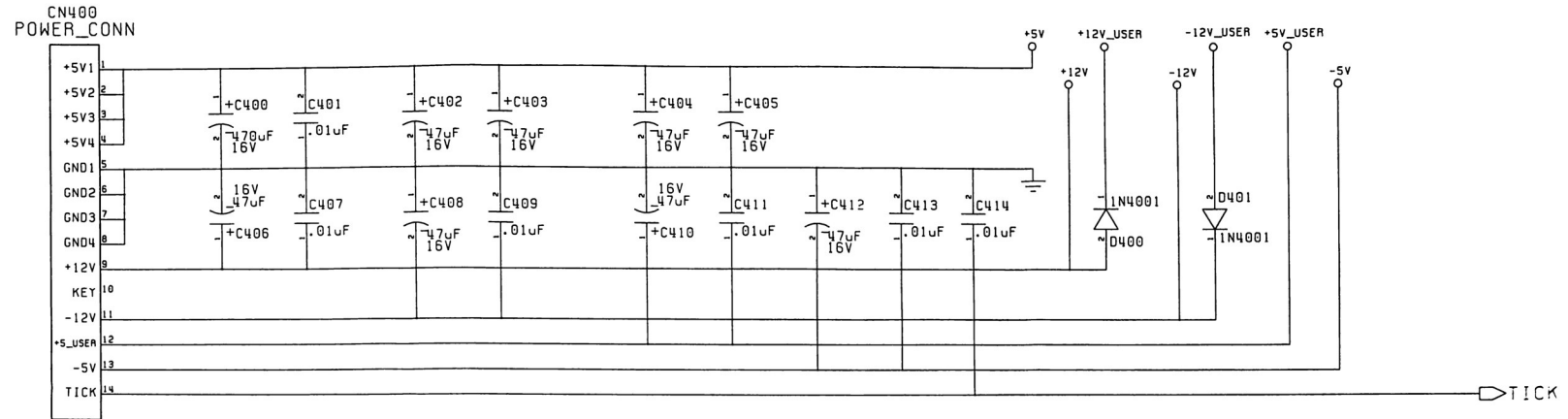






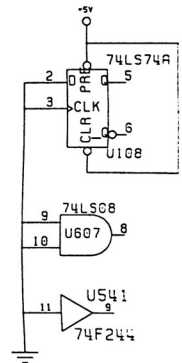
## A2000 PCB ASSEMBLY

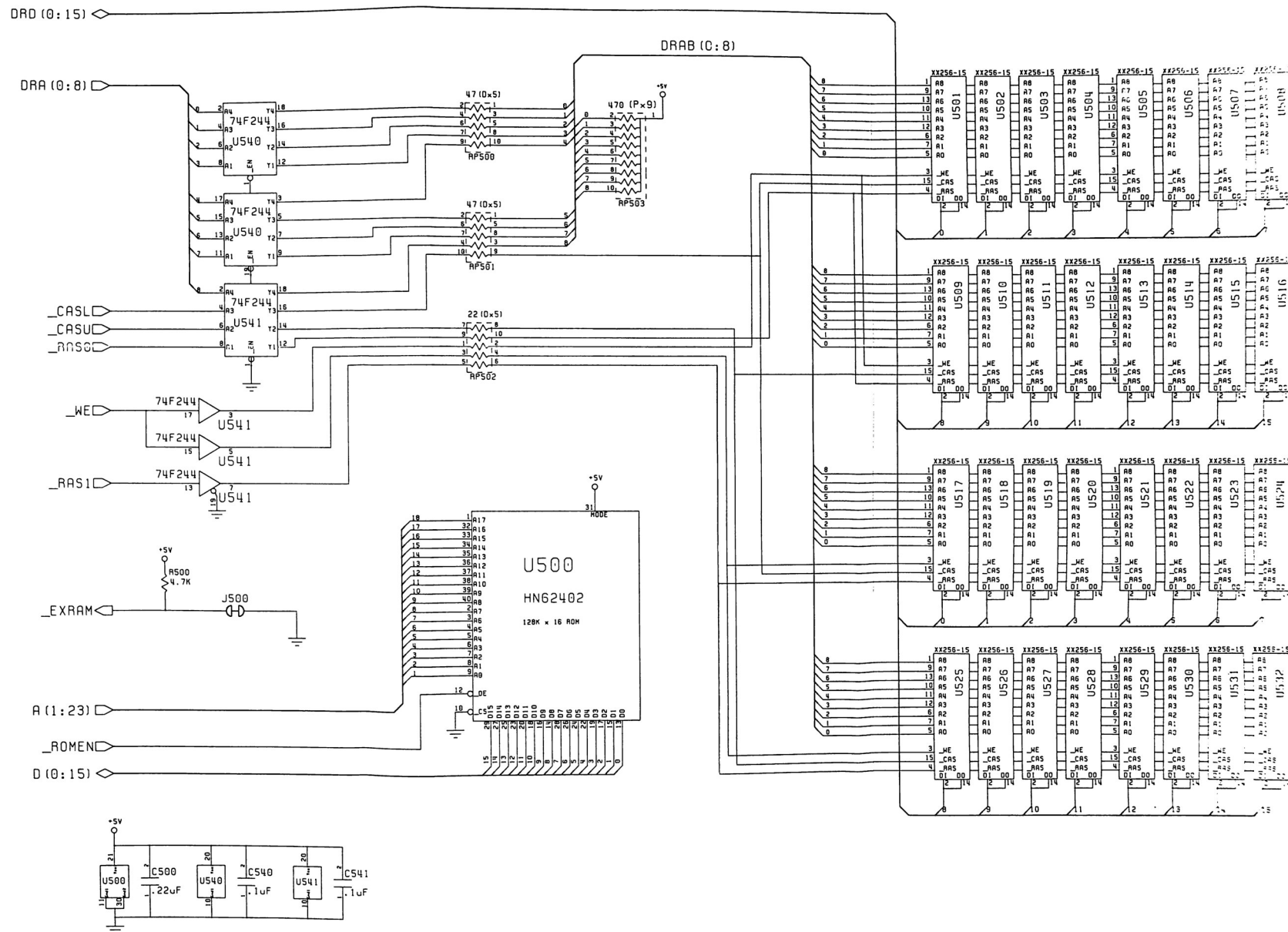
**SCHEMATIC #312721****Sheet 4 of 13**



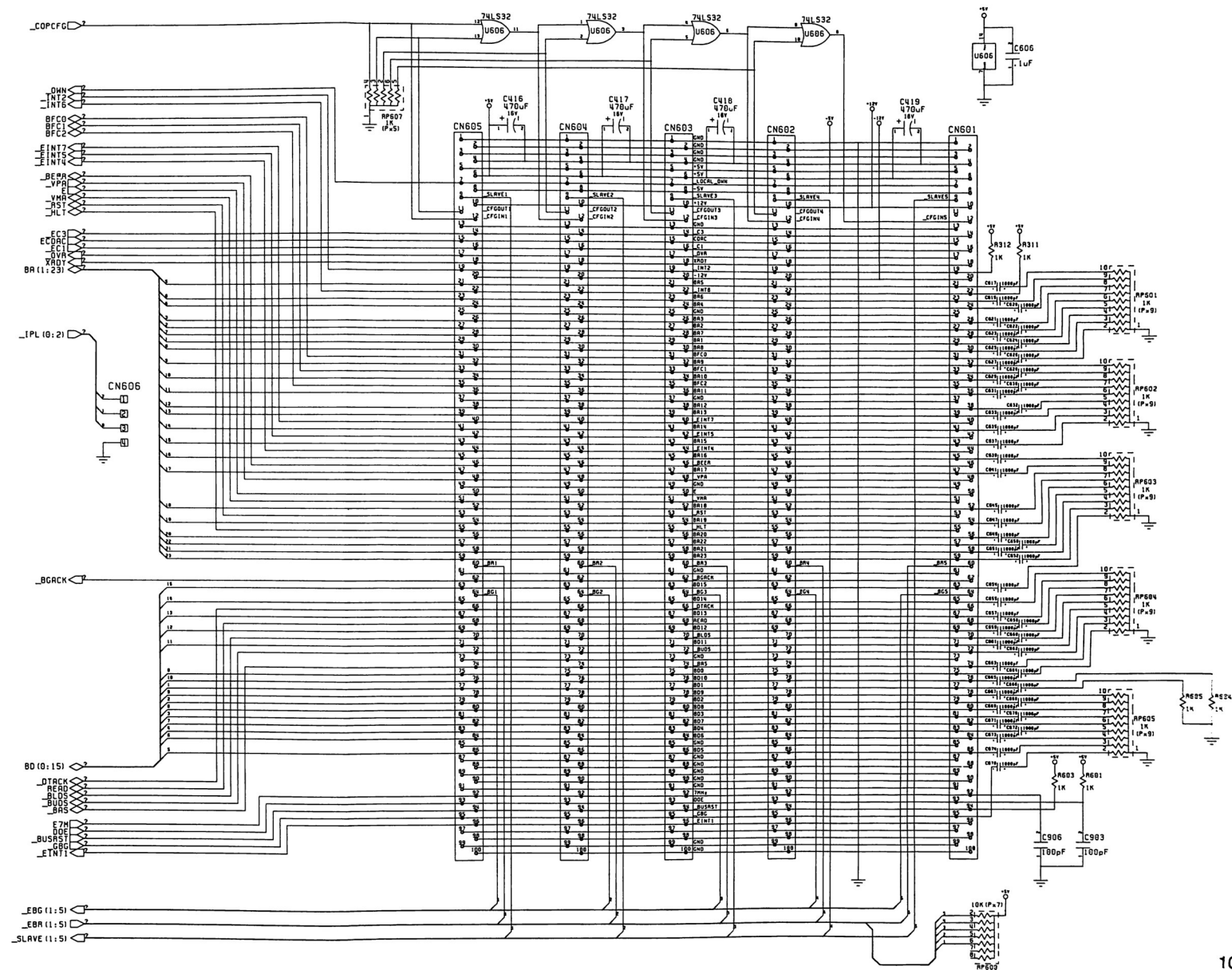
C525-C532 not in United States version

SPARES

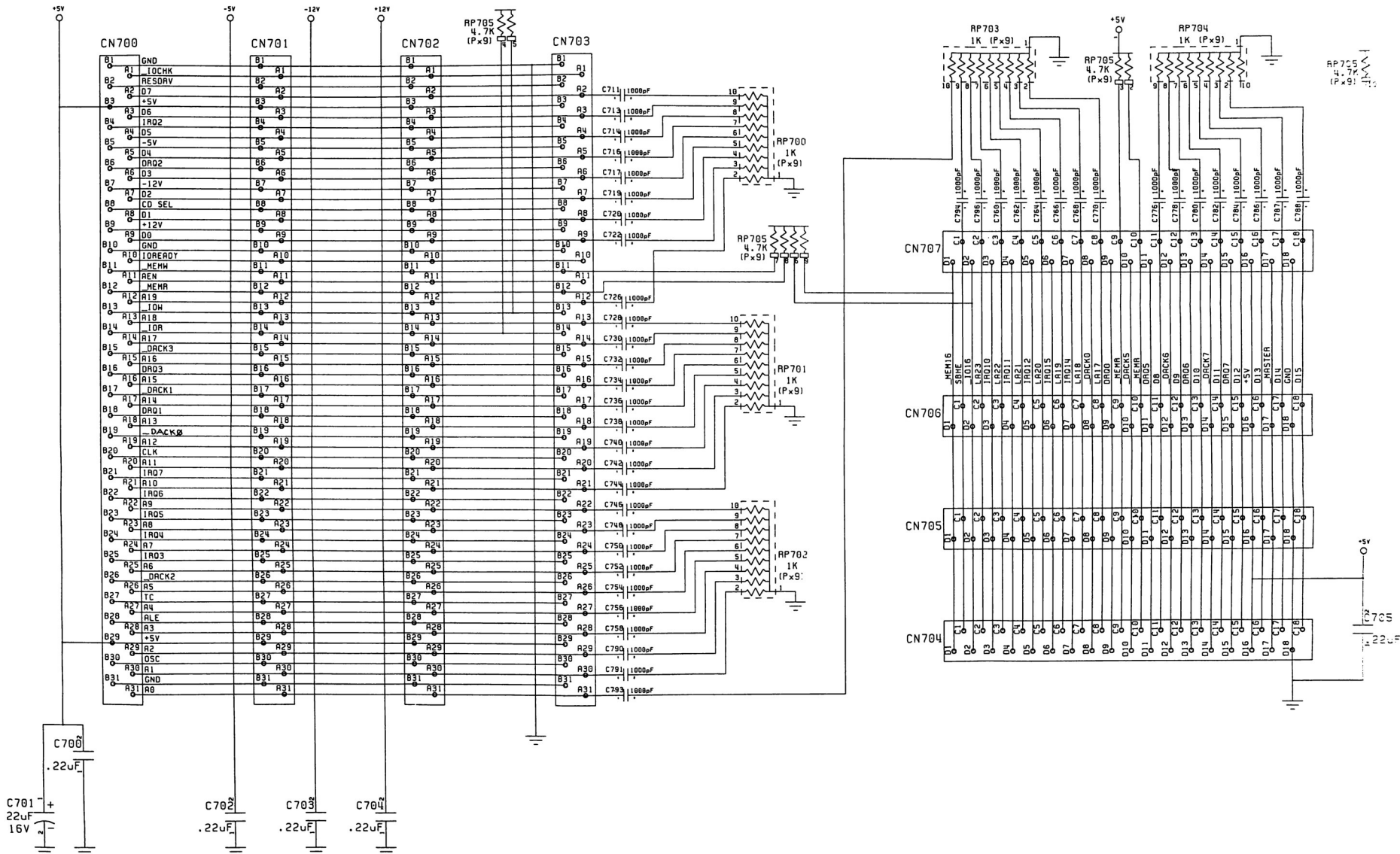


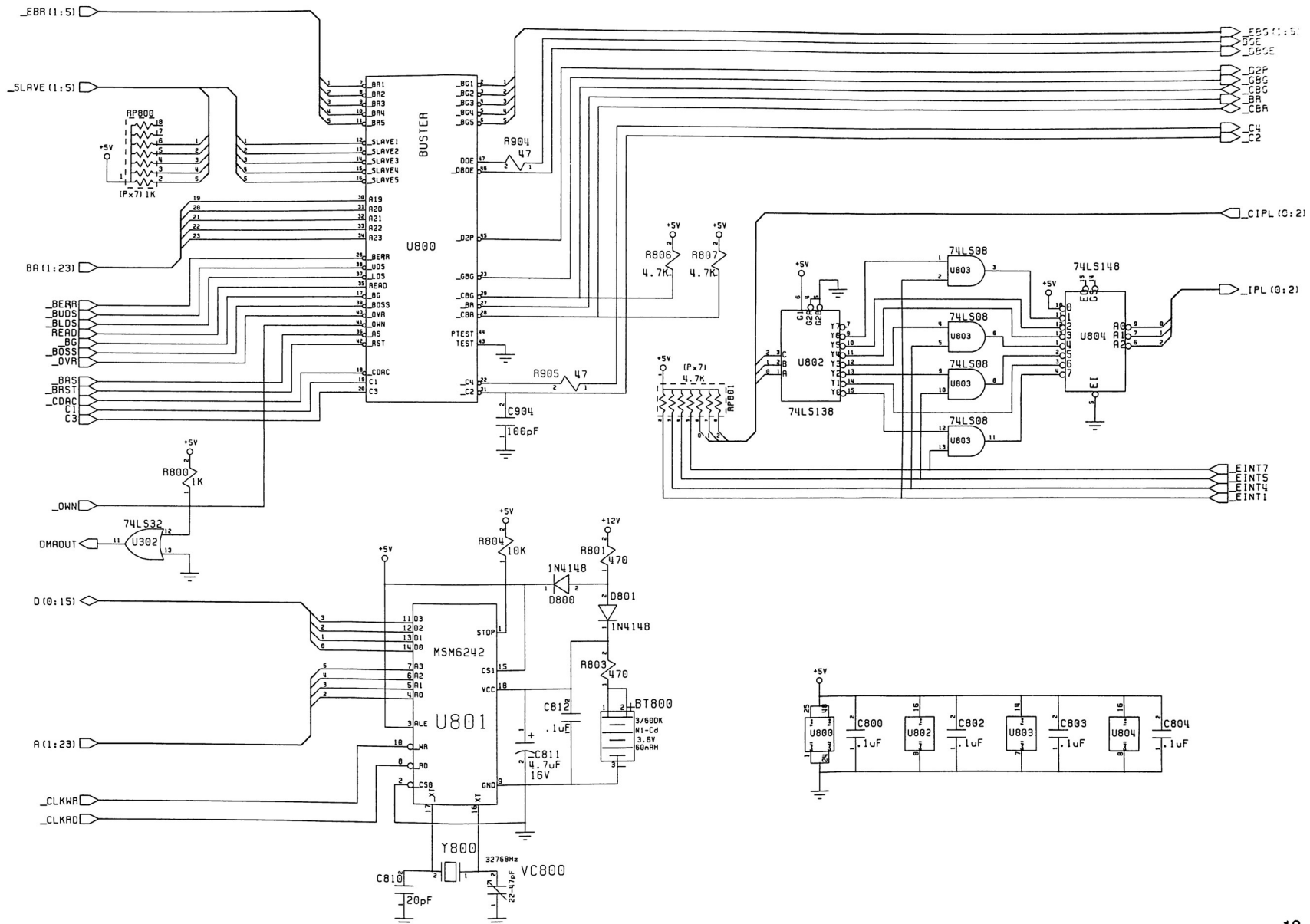


**A2000 PCB ASSEMBLY**  
SCHEMATIC #312721  
Sheet 7 of 13

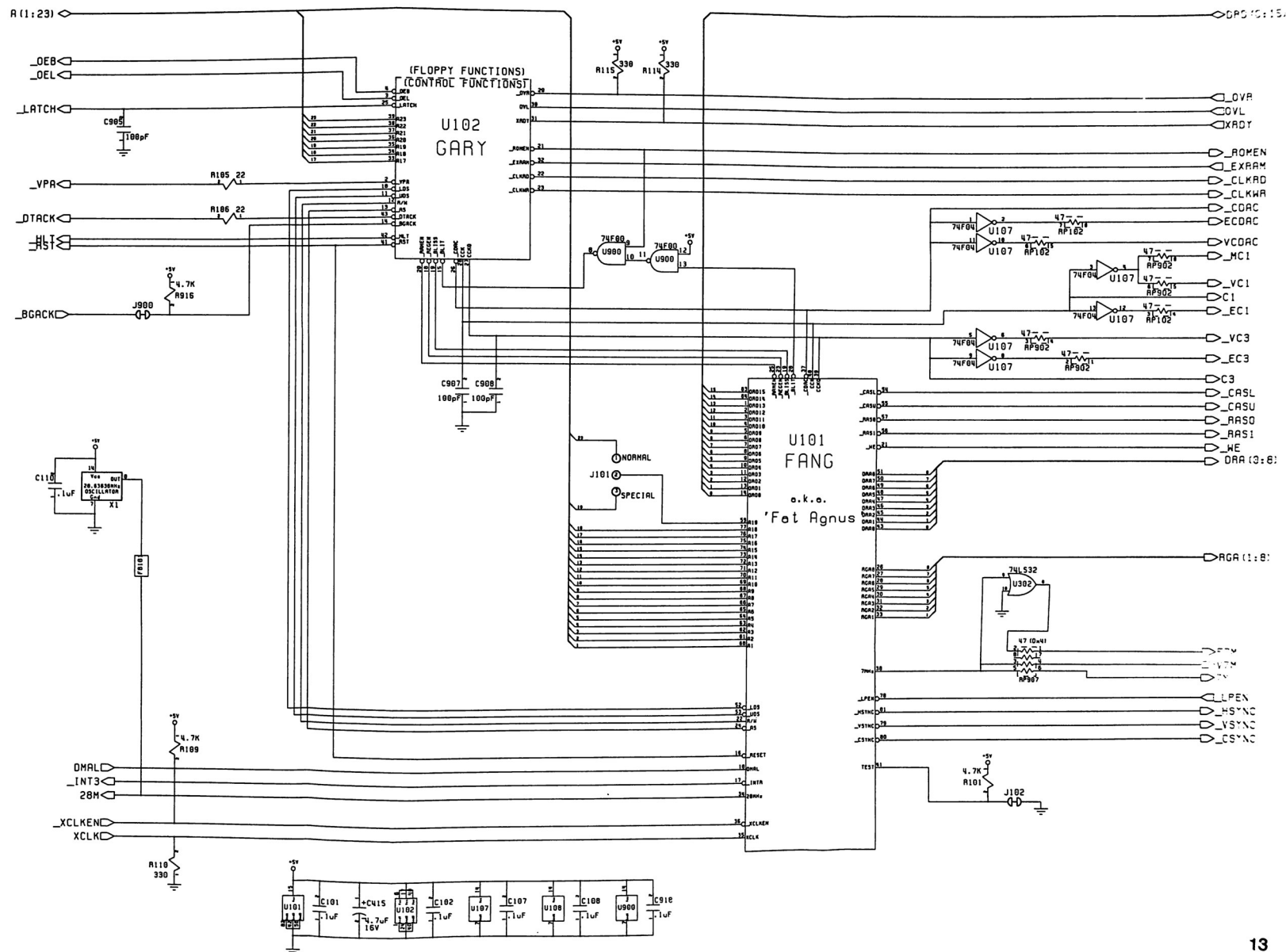


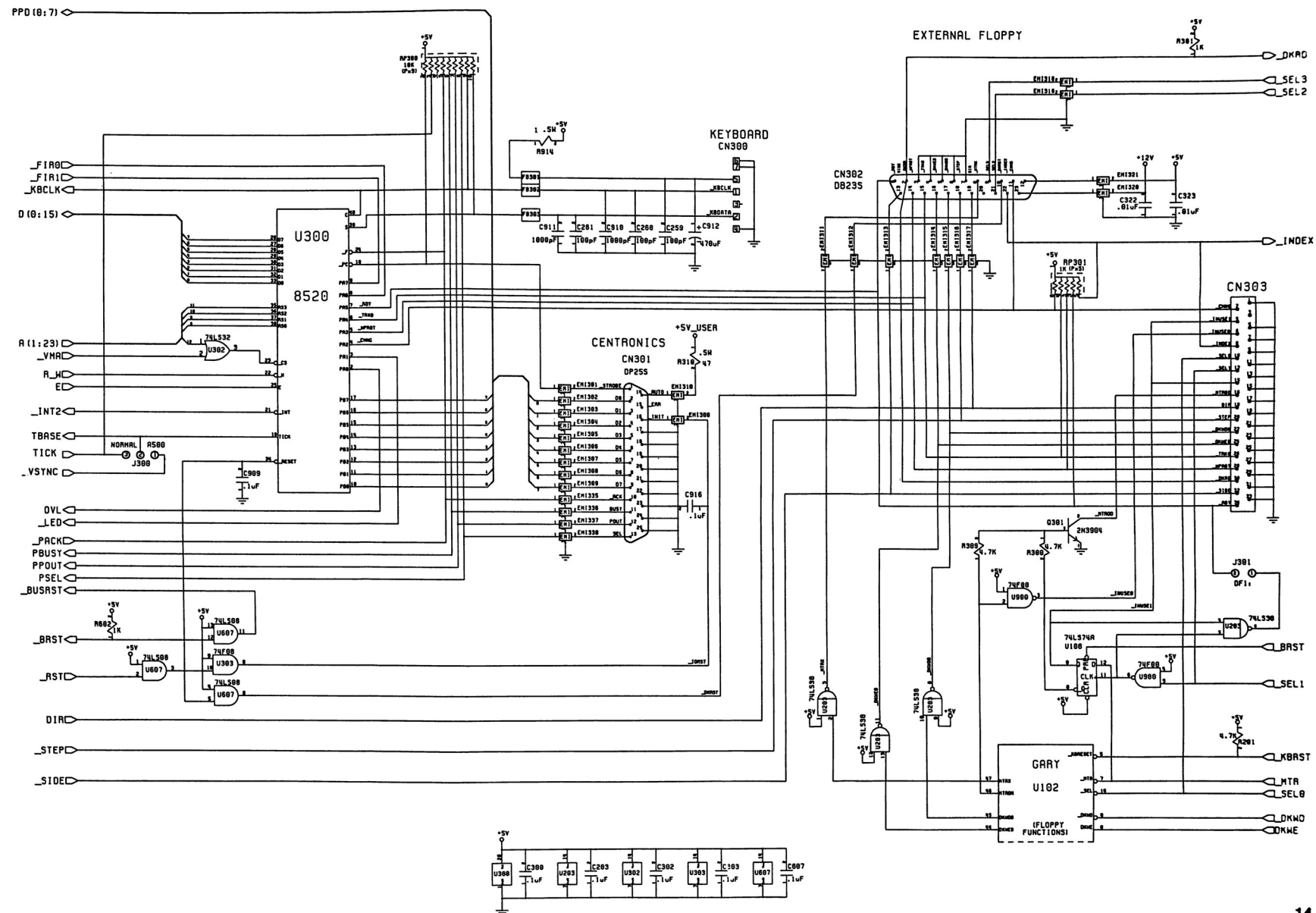
IBM 16 BIT EXTENDED BUS



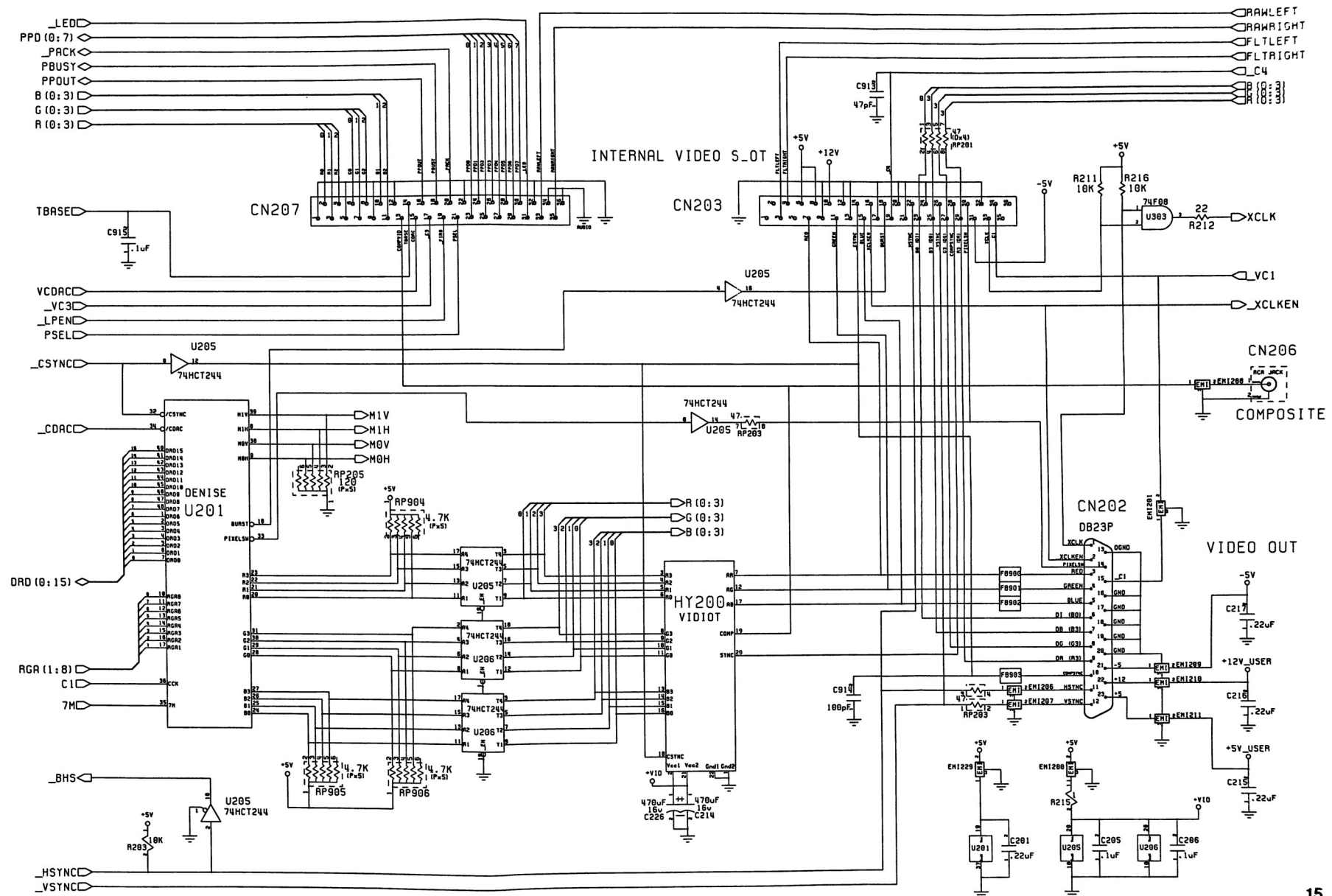


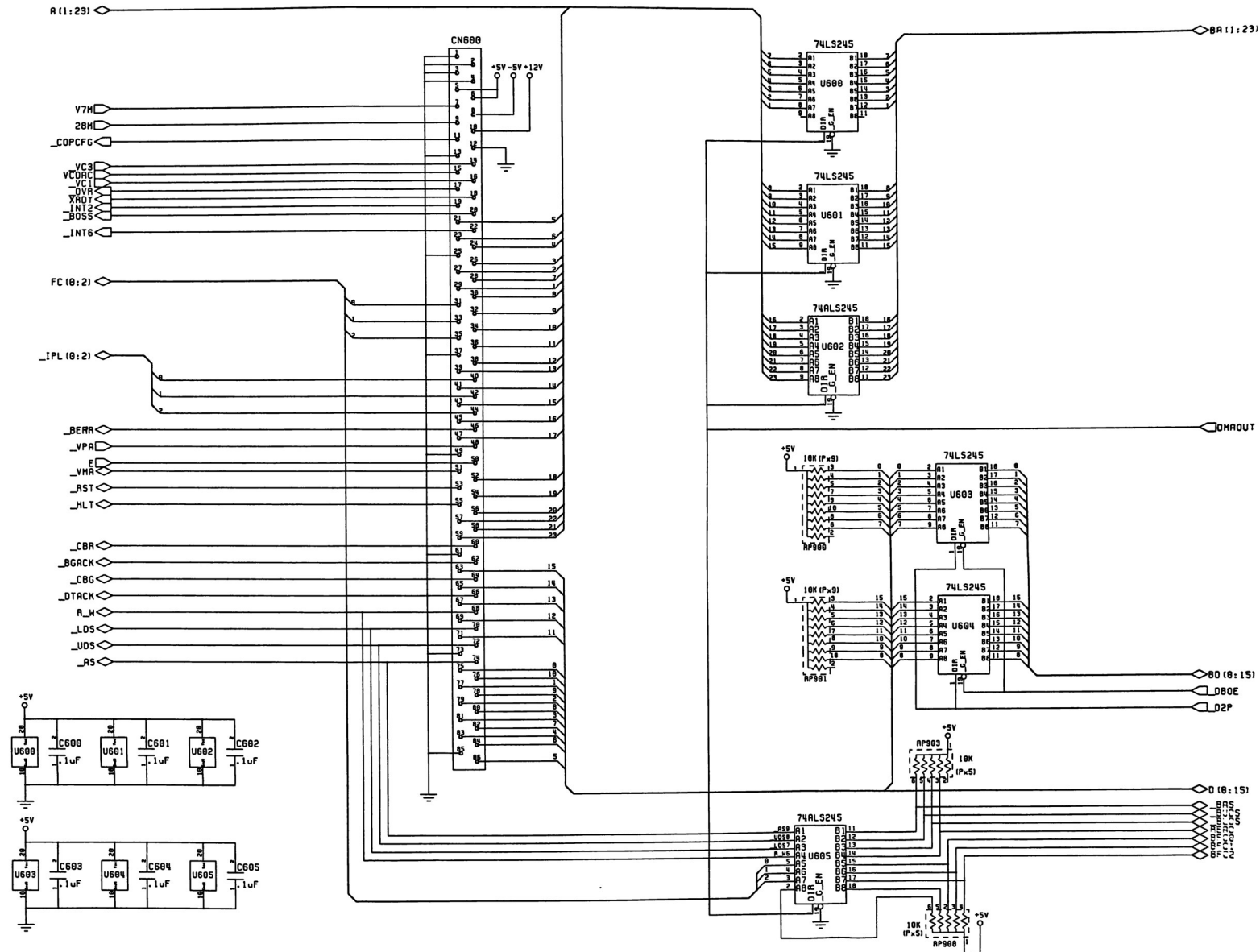






**A2000 PCB ASSEMBLY**  
**SCHEMATIC #312721**  
**Sheet 12 of 13**



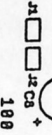


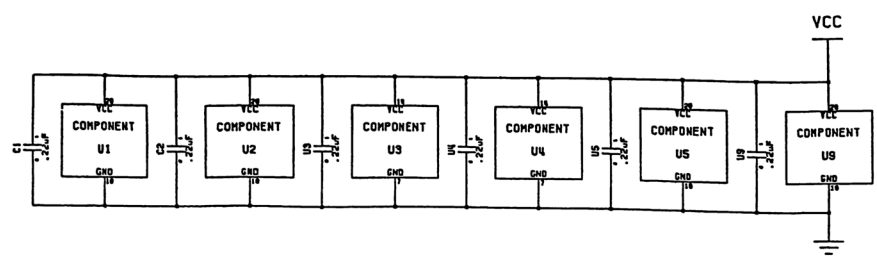
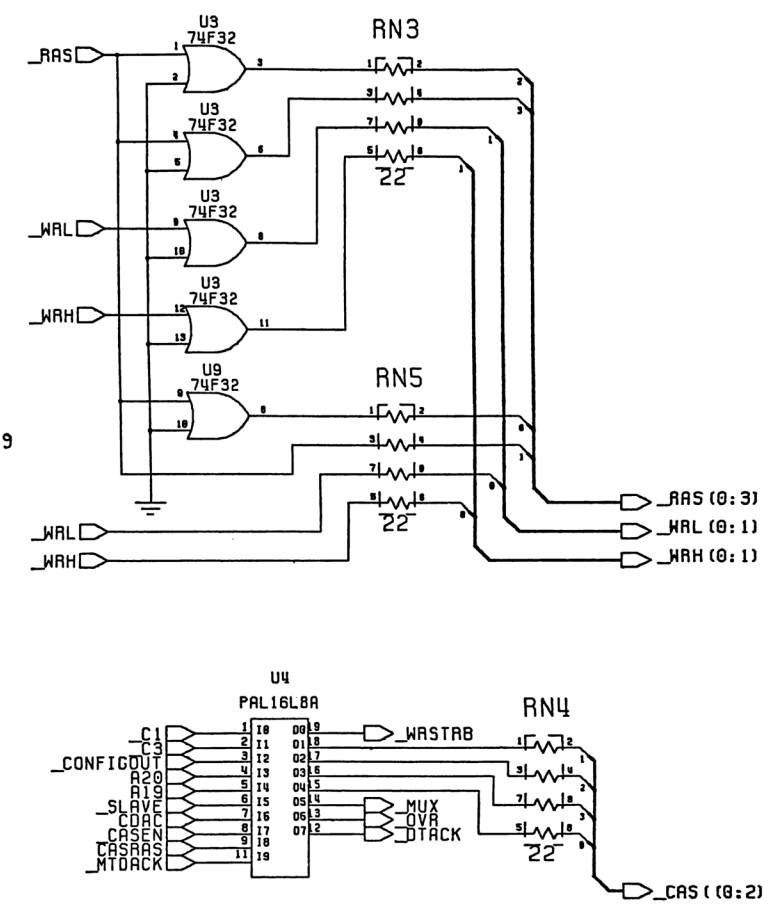
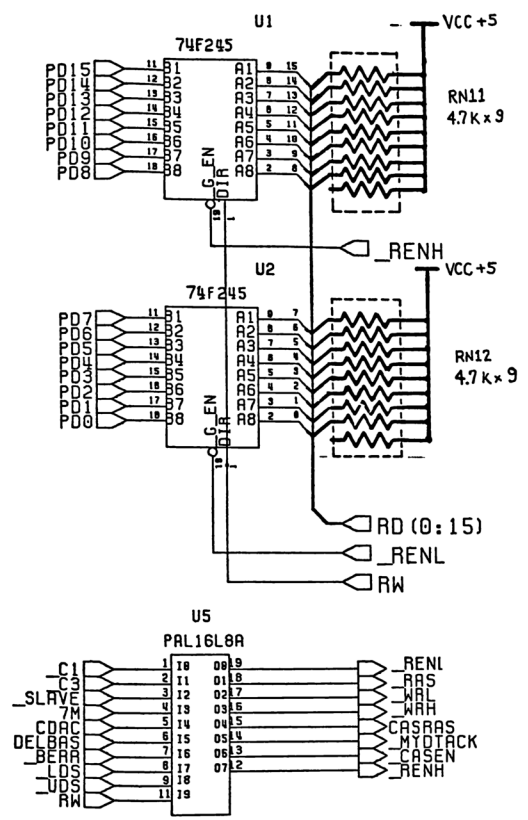
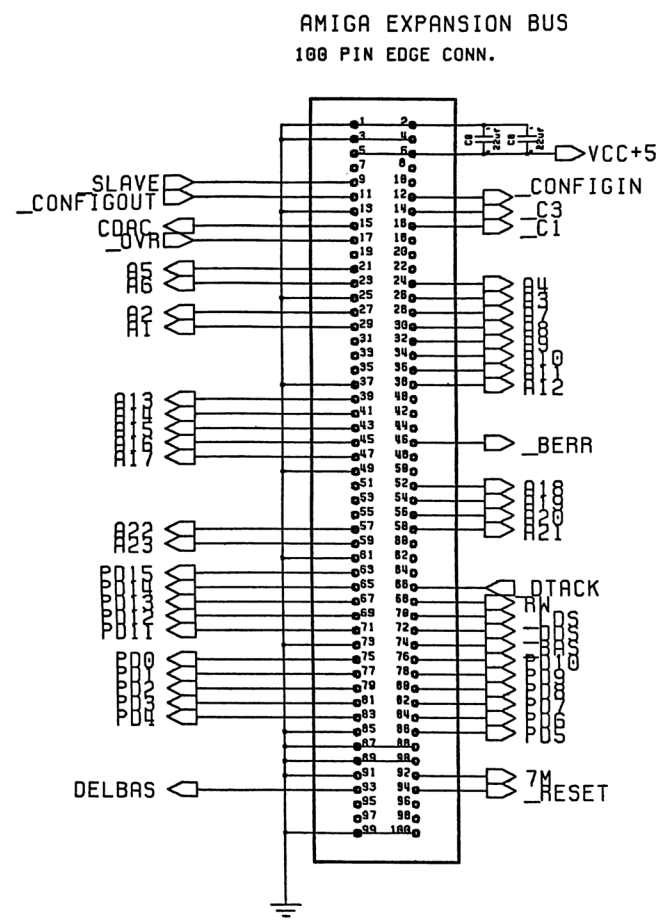
**A 2 0 5 2**

# COMPONENT PARTS LIST

## A2052 2MB RAM BOARD ASSEMBLY

U1, U2	IC 74F245	390089-01
U3, U9	IC 74F32	390077-01
U4	IC PAL 16L8A	318055-01
U5	IC PAL 16L8A	318056-01
U13	IC PAL 16L8A	318057-01
U10	IC PAL 16L8	318054-01
U6, U7	IC 74F258	318052-01
U11	IC 74LS04	901521-02
U12	IC 74LS374	901521-43
U14	IC 74F521	318041-01
U8	IC 74F244	318050-01
U15-U78	DRAM 256K X 1	390226-01
RN2	1K X 7 SIP, 8 PIN PULL-UP	902442-22
RN1	1K X 9 SIP, 10 PIN PULL-UP	902410-10
RN3-RN5, RN7, RN10	22 X 4 SIP, 8 PIN	902422-04
RN8, RN9	22 X 5 SIP, 10 PIN	390227-01
RN11, RN12	4.7K X 9 SIP, 10 PIN	902410-08
C1-C7, C10-C15	.22 $\mu$ F .2" CERAMIC BYPASS	315034-01
C16-C55	.33 $\mu$ F .2" CERAMIC BYPASS	315034-02
C8, C9	22 $\mu$ F 35V RADIAL ELECTROLYTIC	390101-04
J1, J2	2 PIN HEADER .1"	903345-01
J1, J2 sub:	2 PIN HEADER .1"	903326-02
	EXTENSION CARD PANEL	380120-08
	M-3 SCREW X 4.0 LG	906800-01

PCB ASSEMBLY #312365-01  
Sheet 1 of 5



MEMORY CONTROL AND DATA BUFFERS



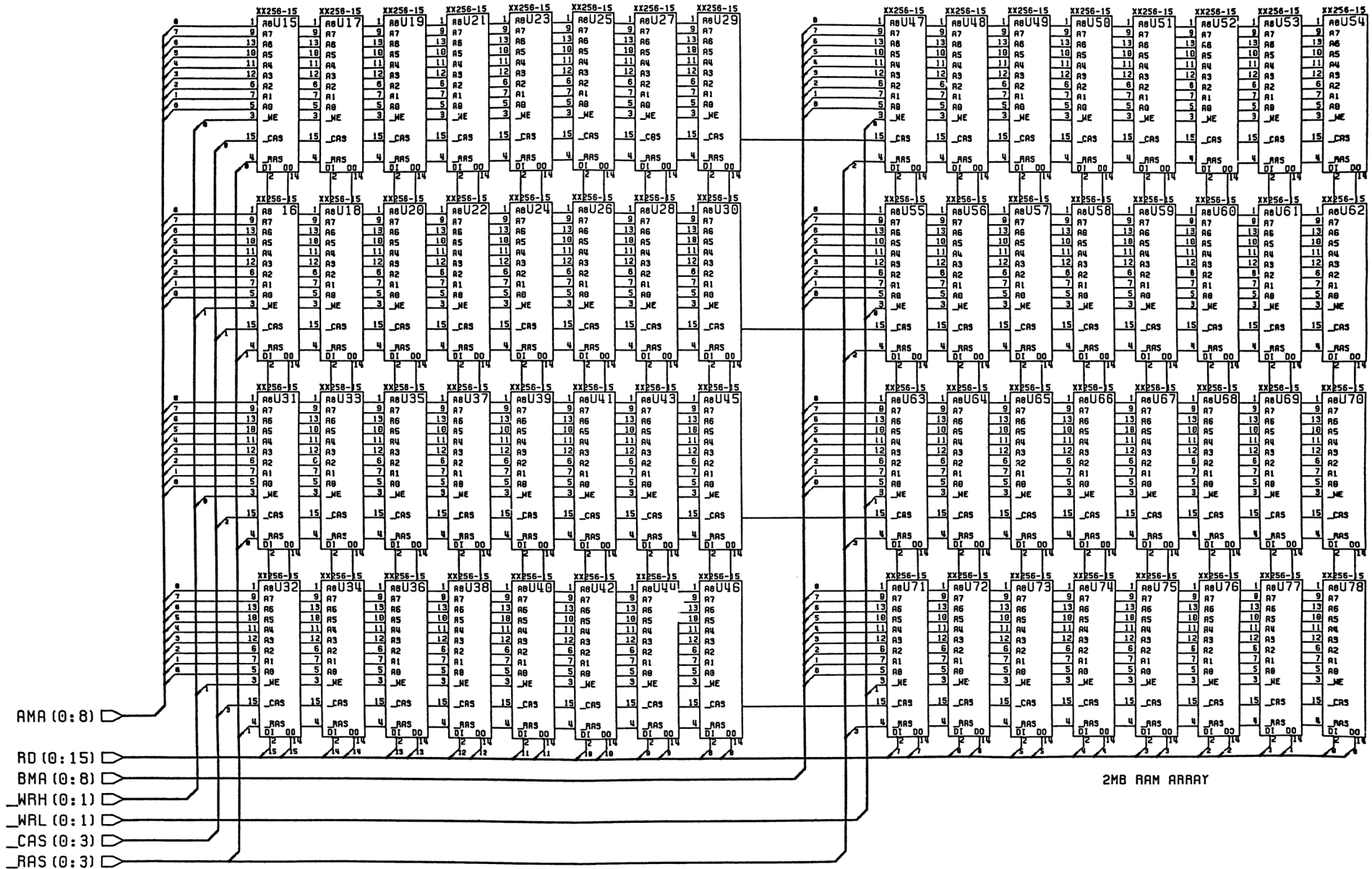
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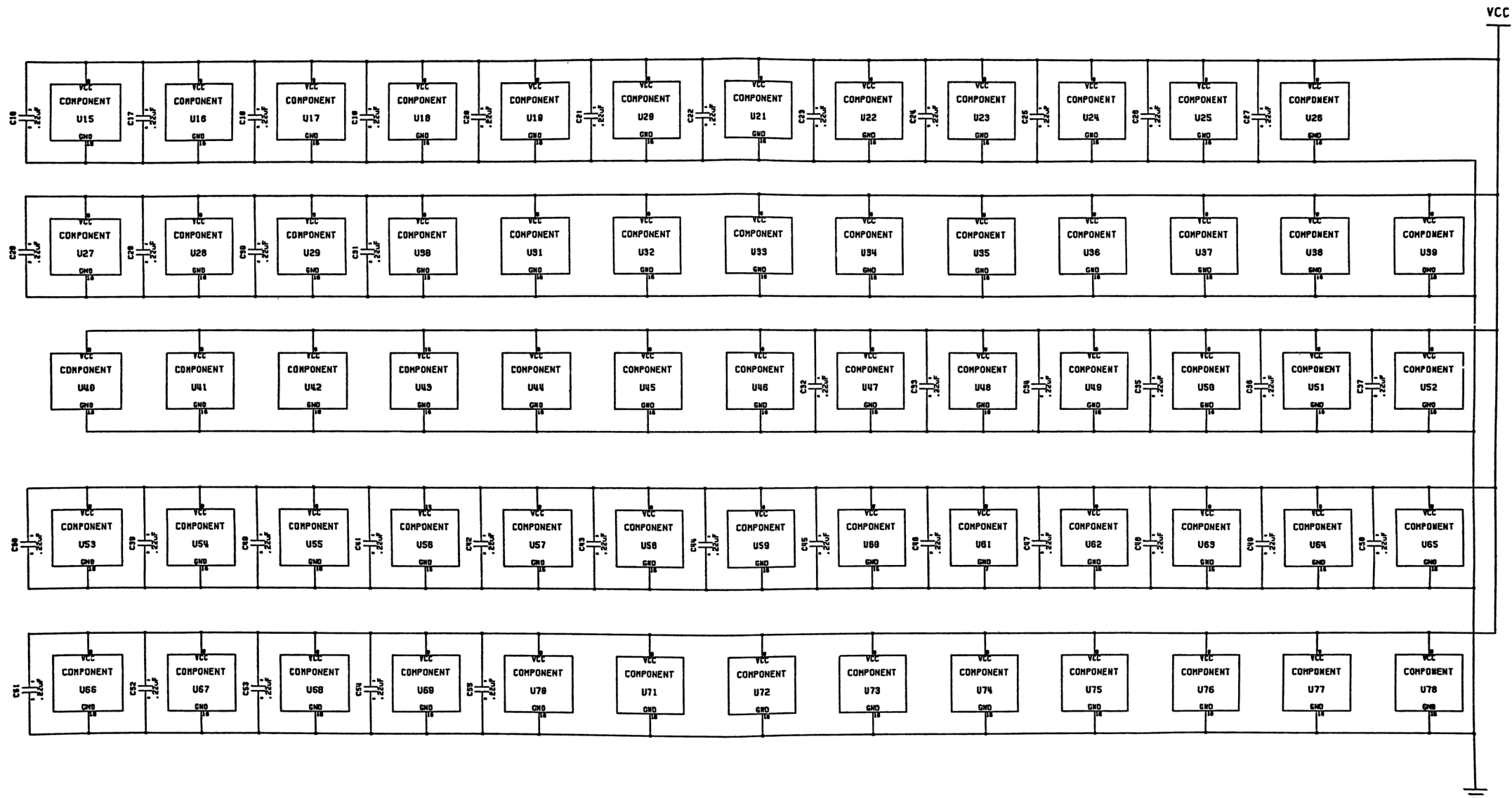


# A2052 RAM BOARD ASSEMBLY

## SCHEMATIC #312366

### Sheet 4 of 5





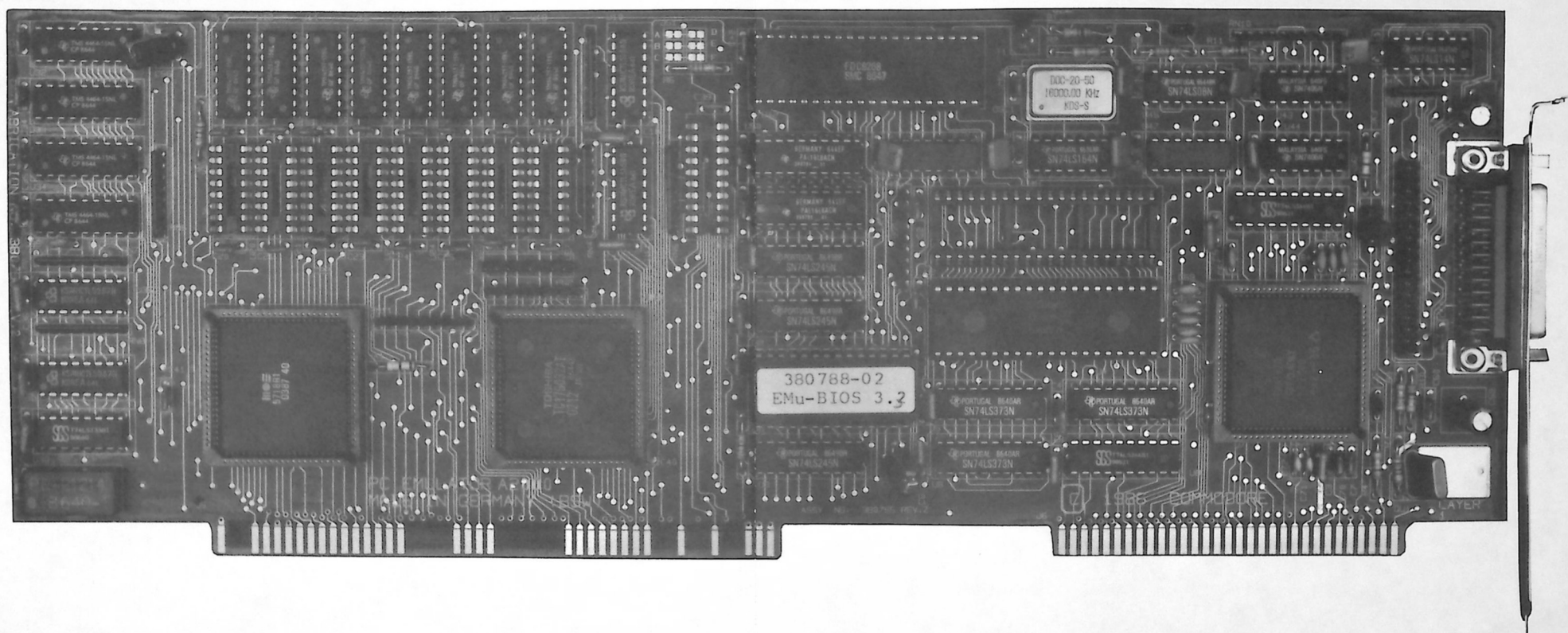
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# PARTS LIST

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INTEGRATED CIRCUITS			CAPACITORS		
U40	ADDRESS BUS TRANSL.	380658-01	C52	CER RADIAL 47pF	251070-18
U41	DATA BUS TRANSL.	380659-01	C55,61,62	CER RADIAL 100 pF	251070-22
	5718		C71,72	CER RADIAL 470 pF/50V	251071-30
U1	8088	380200-01	C3-6,8-11	CER RADIAL 0.1µF	900020-01
U2	8087	380201-01	C1,2,7	CER RADIAL 0.22µF/50V	900022-01
U29	PAL RAM DECODER	380783-01	53,54,60,70		
	EMULATOR		C56-59	ELECTR. AXIAL 47µF/25V	900100-27
U50	PAL I/O DECODER	380784-01	MISCELLANEOUS		
U39	PAL CONFIGURATION	380785-01	OSC1	OSCILLATOR 16 MHz,	325566-10
U7	FE 2010	380786-01		HYBRID	
U12-27	DRAM 256K X 1, 150 nS	380223-01	QU1	QUARZ 14.31818 MHz	900558-01
U32-35	DRAM 64K X 4, 150nS	380256-01	U28	SOCKET 28 PIN	904150-05
U42	FDC 9268	380787-01	U20-27	SOCKET 16 PIN	904150-02
U28	BIOS PC-EMULATOR	380788-01	U29,50	SOCKET 20 PIN	904150-08
U10,11	74 HCT 158	380227-04	U1,2,42	SOCKET 40 PIN	904150-06
U36,37	74 HCT 257	380227-58	U7,40,41	SOCKET 84 PIN	380789-01
U43,44	7406	901522-06	U39	SOCKET 20 PIN	904150-08
U45	74 LS 08	901521-03		SCREW, PAN HEAD	906800-03
U46	74 LS 14	901521-30		M 3 X 8	
U47	74 LS 125	901521-20		LOCKWASHER EXT.	905652-04
U38	74 LS 133	901521-15		TOOTH. 0 3.2 MM	
U48	74 LS 164	901521-28		NUT HEX M 3	905960-03
U49	74 LS 175	901521-34		RIVET DOME — Sub. for above three items	
U8,9	74 LS 244	901521-13		EXTENSION CARD PANEL	380120-08
U3,30,51	74 LS 245	901521-46	CONNECTORS		
U4-6	74 LS 373	901521-29	JA1,2	JUMPER RM: 2.54 MM	380333-01
U31	DIGITAL DELAY LINE	324667-01	J1	WIRE JUMPER	903781-01
TRANSISTORS				HEADER ASSY DUAL	903345-03
T1	BC-327 B	324219-01		ROW .100CTR.	
RESISTORS — All are carbon 1/4 watt, 5% unless noted			J3	HEADER ASSY DUAL	903345-17
				ROW .100CTR.	
RN9	4 X 1K	902417-03	J4	23 PIN SUB MINI	327033-01
RN10	9 X 4K7	902410-08		"D" FEMALE	
RN1,2,11	8 X 4K7	902412-05	J4	23 PIN SUB MINI	310975-01 sub:
RN3-8	4 X 68 OHM	902422-07		"D" FEMALE	
R7,8	33 OHM	901550-105	J2	HEADER ASSY SINGLE	903326-02
R3,5	100 OHM	901550-49		ROW .100CTR.	
R1,10,11	1K	901550-01	J7	HEADER ASSY SINGLE	903326-08
R6	2K2	901550-18		ROW .100CTR.	
R2,9	4K7	901550-19			
R4	1M	901550-84			

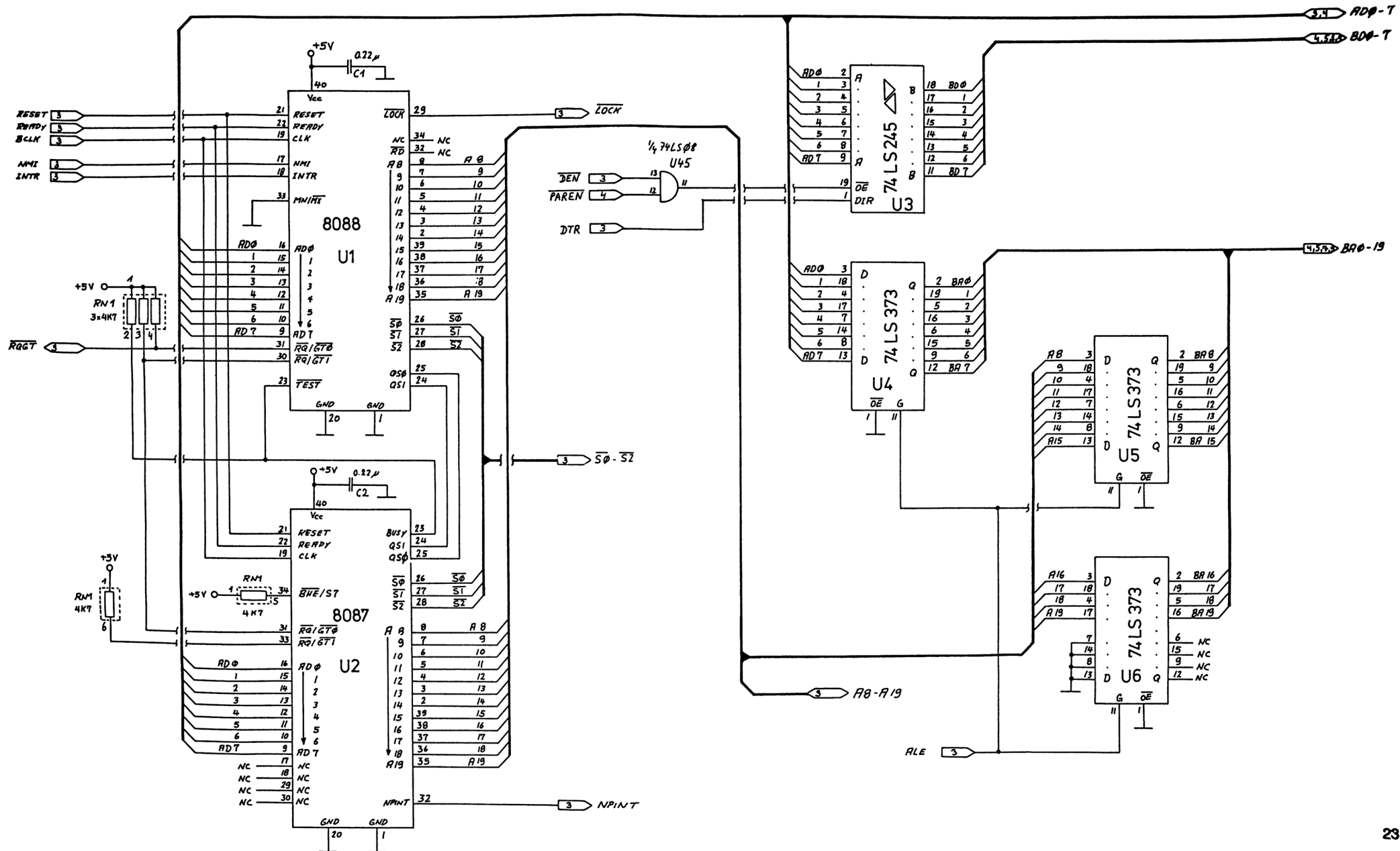
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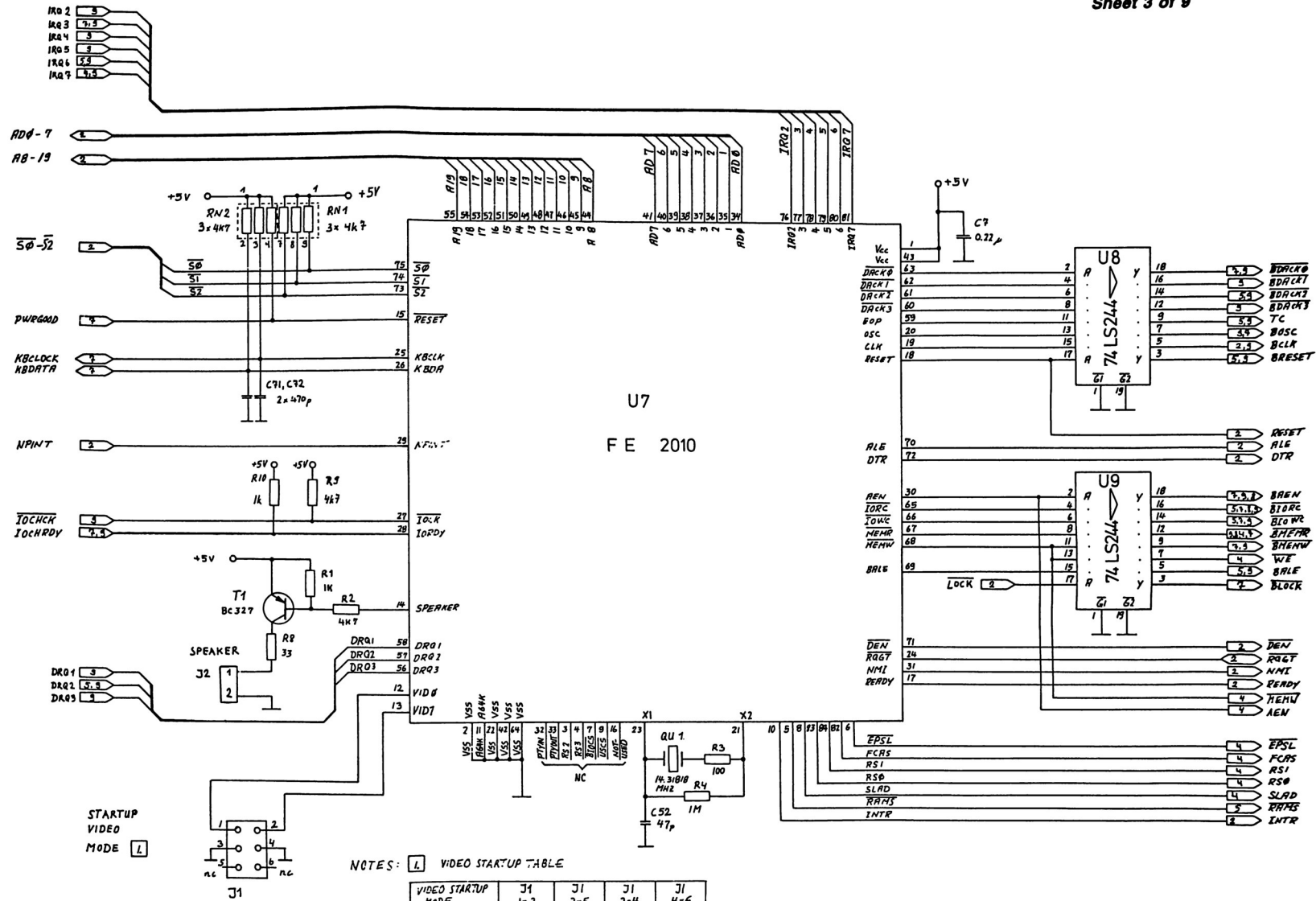
# A2088 XT BRIDGE BOARD

SCHEMATIC #380756

Sheet 2 of 9



**A2088 XT BRIDGE BOARD**  
**SCHEMATIC #380758**  
**Sheet 3 of 9**



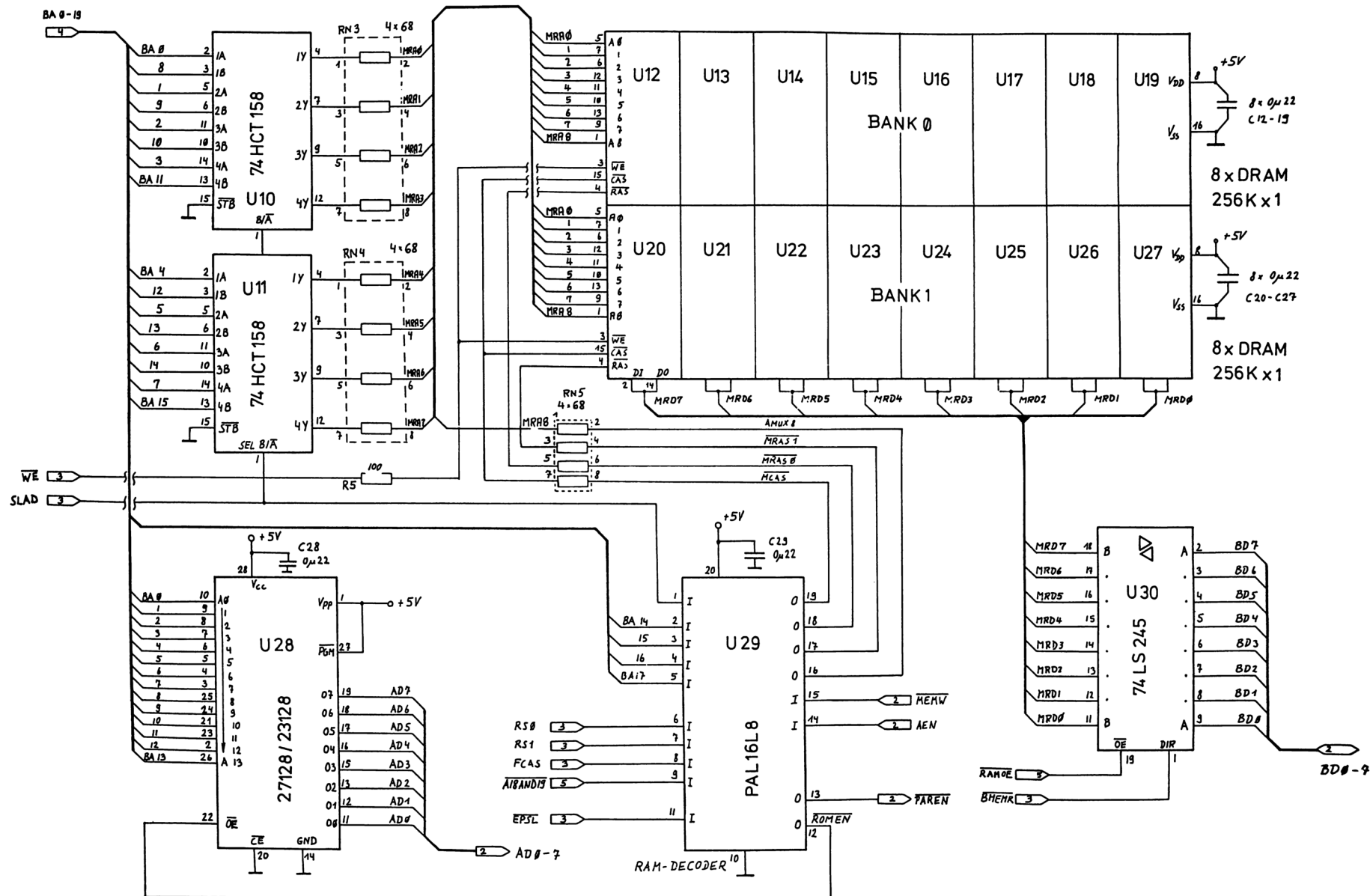
VIDEO STARTUP MODE	J1 1-3	J1 3-5	J1 2-4	J1 4-6
MONO	OPEN	CLOSED	OPEN	CLOSED
COLOR 40x25	OPEN	CLOSED	CLOSED	OPEN
COLOR 80x25	CLOSED	OPEN	OPEN	CLOSED
NONE	CLOSED	OPEN	CLOSED	OPEN

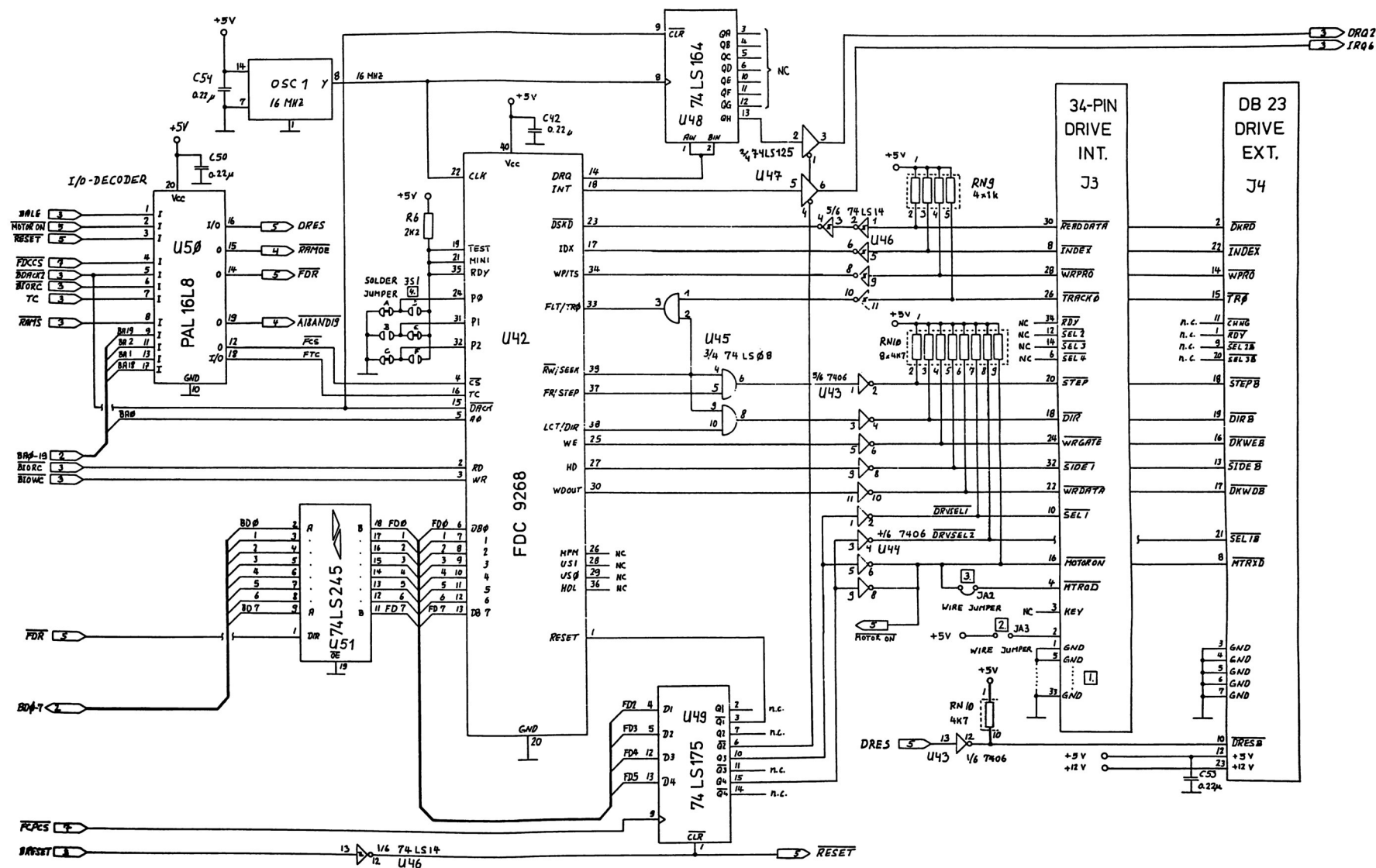


# A2088 XT BRIDGE BOARD

SCHEMATIC #380758

Sheet 4 of 9

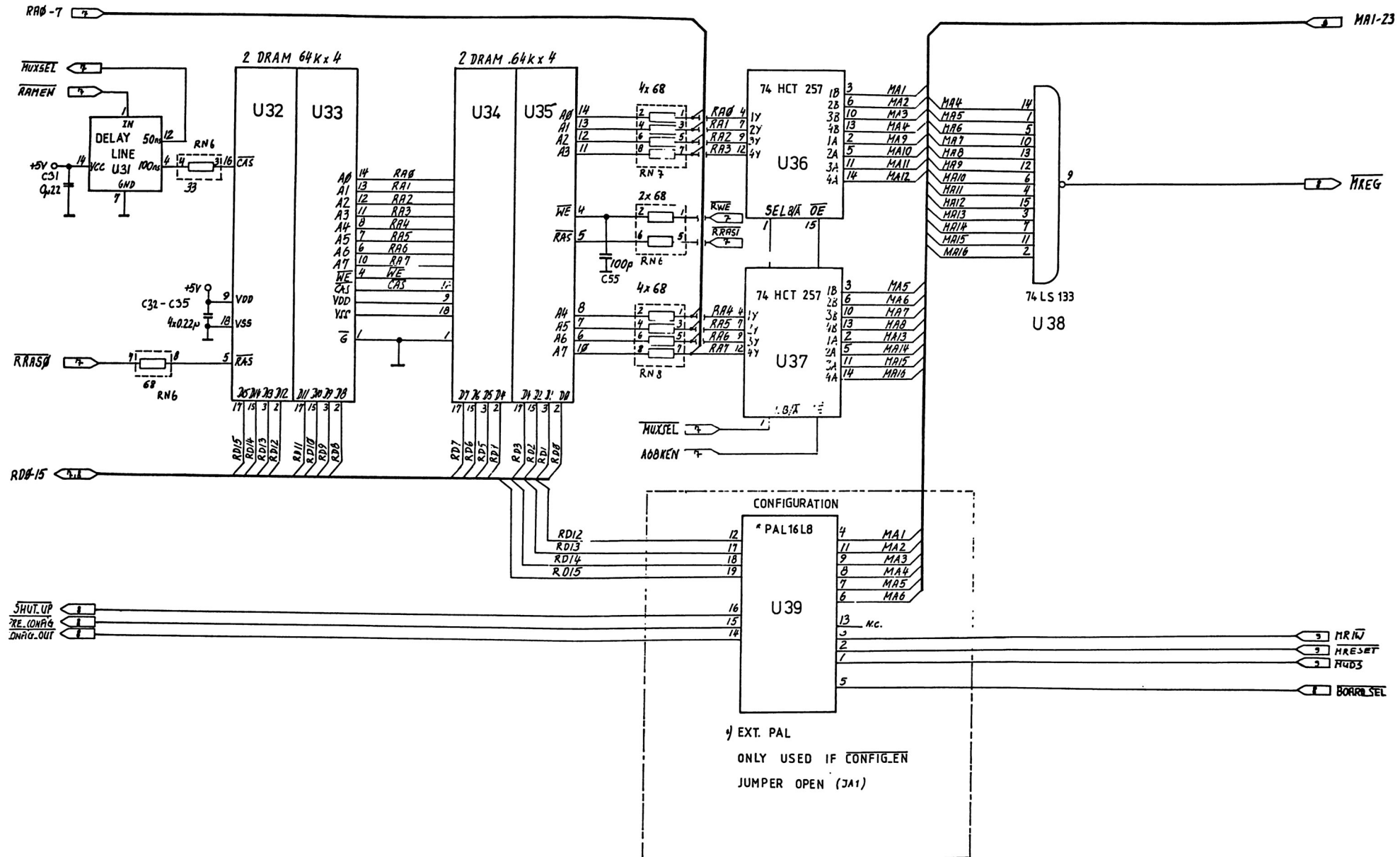




# A2088 XT BRIDGE BOARD

SCHEMATIC #380756

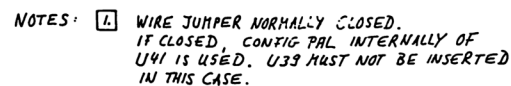
Sheet 6 of 9



**Sheet 7 of 9**



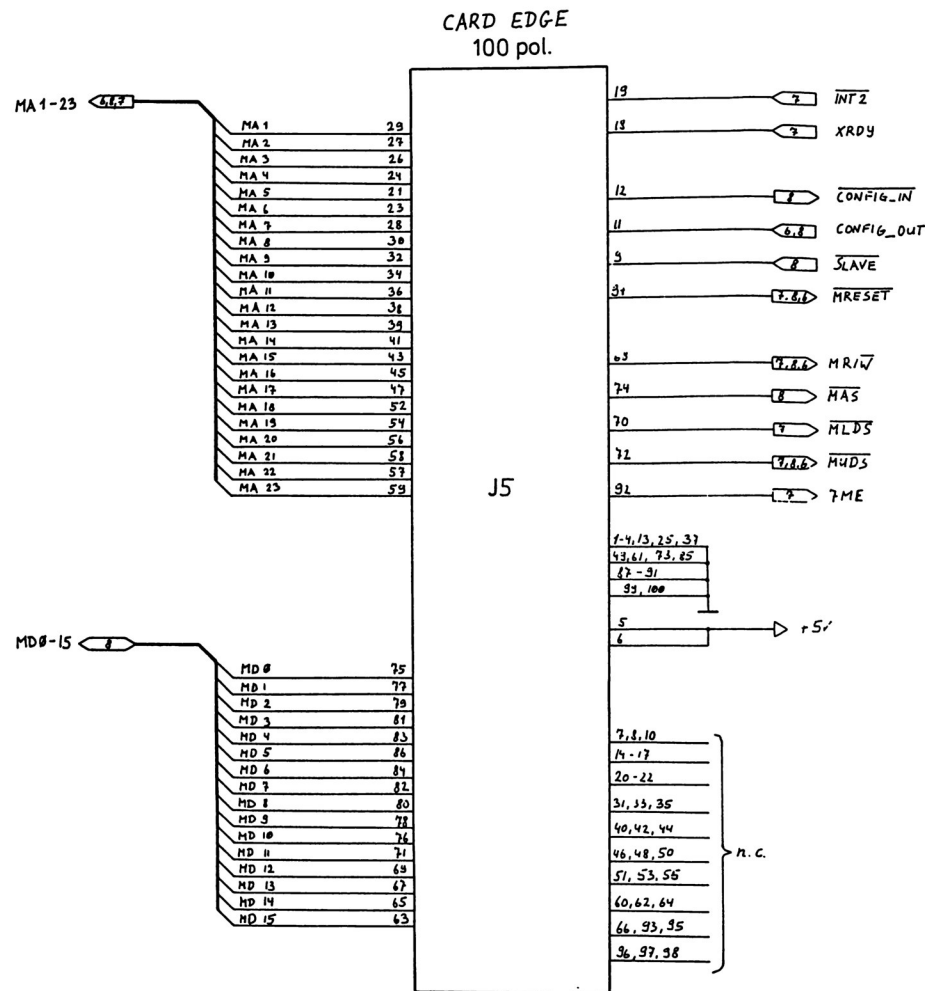
**Sheet 8 of 9**



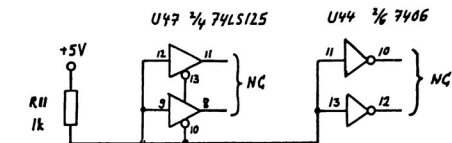
# A2088 XT BRIDGE BOARD

## SCHEMATIC #380756

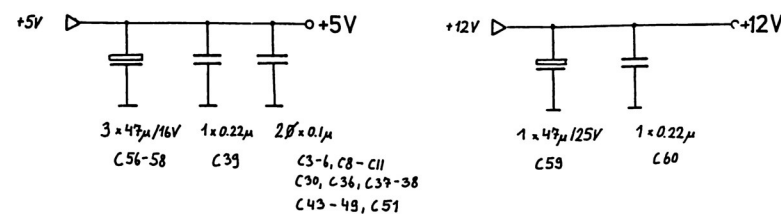
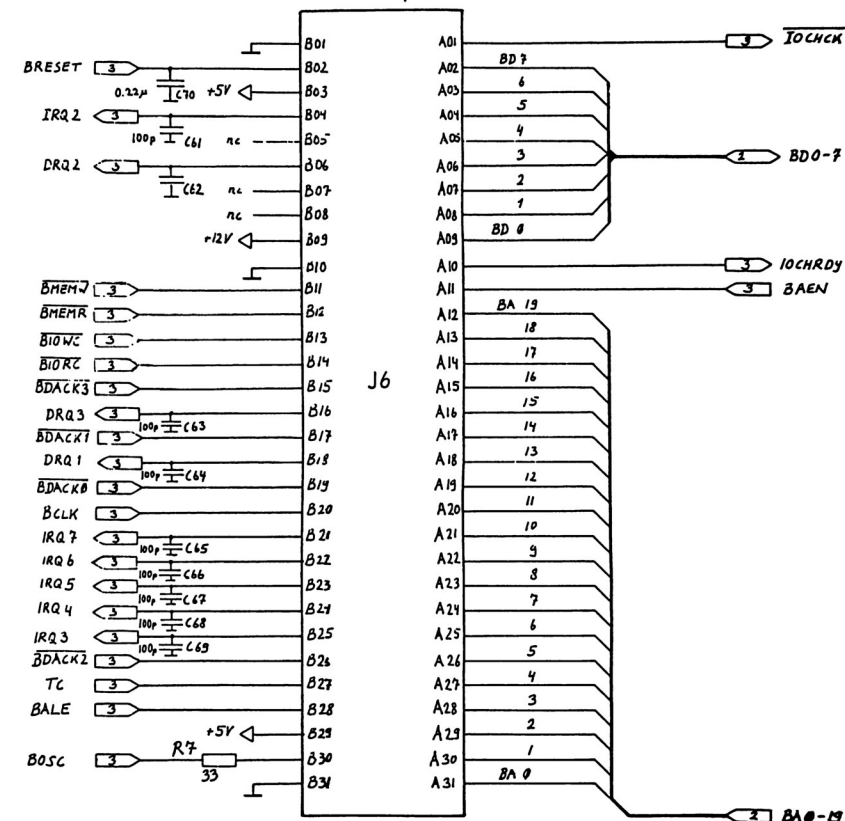
### Sheet 9 of 9



SPARE:



CARD EDGE  
2 x 31 pol.



**A 2090**

# COMPONENT PARTS LIST

## A2090 HARD DISK CONTROLLER PCB ASSEMBLY

**PLEASE NOTE:** Commodore part numbers are provided for reference only and do not indicate the availability of parts from Commodore. Industry standard parts (Resistors, Capacitors, Connectors) should be secured locally. Approved cross-references for TTL chips, Transistors, etc. are available in manual form through the Service Department, order part #314000-01.

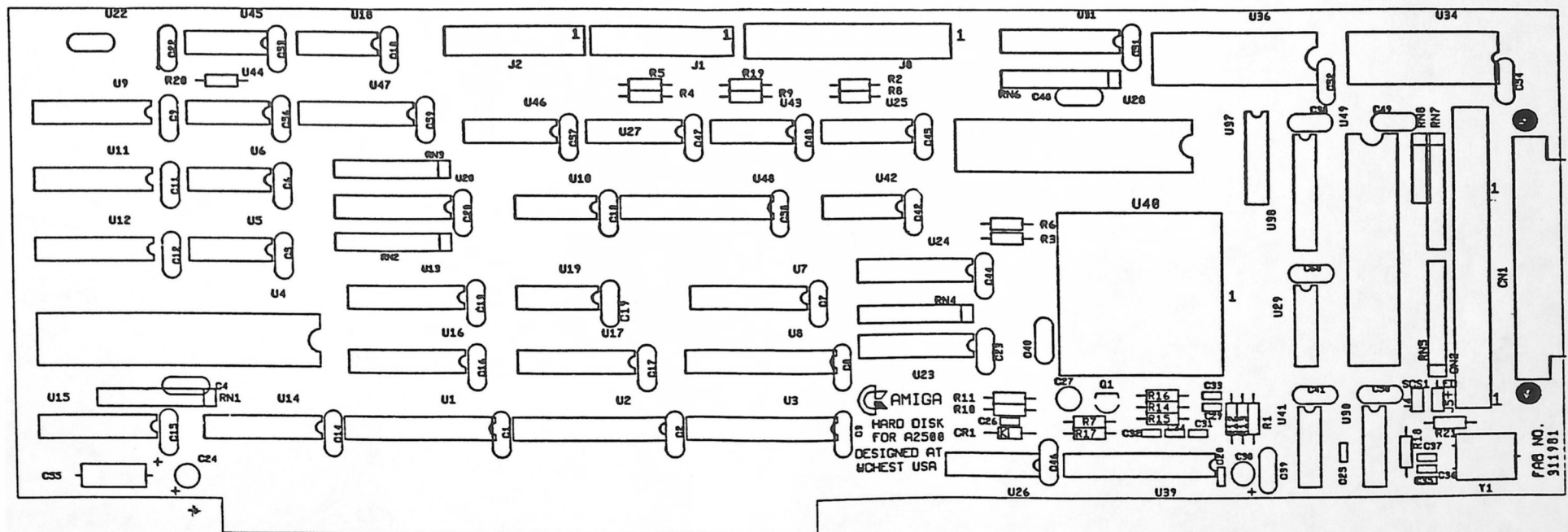
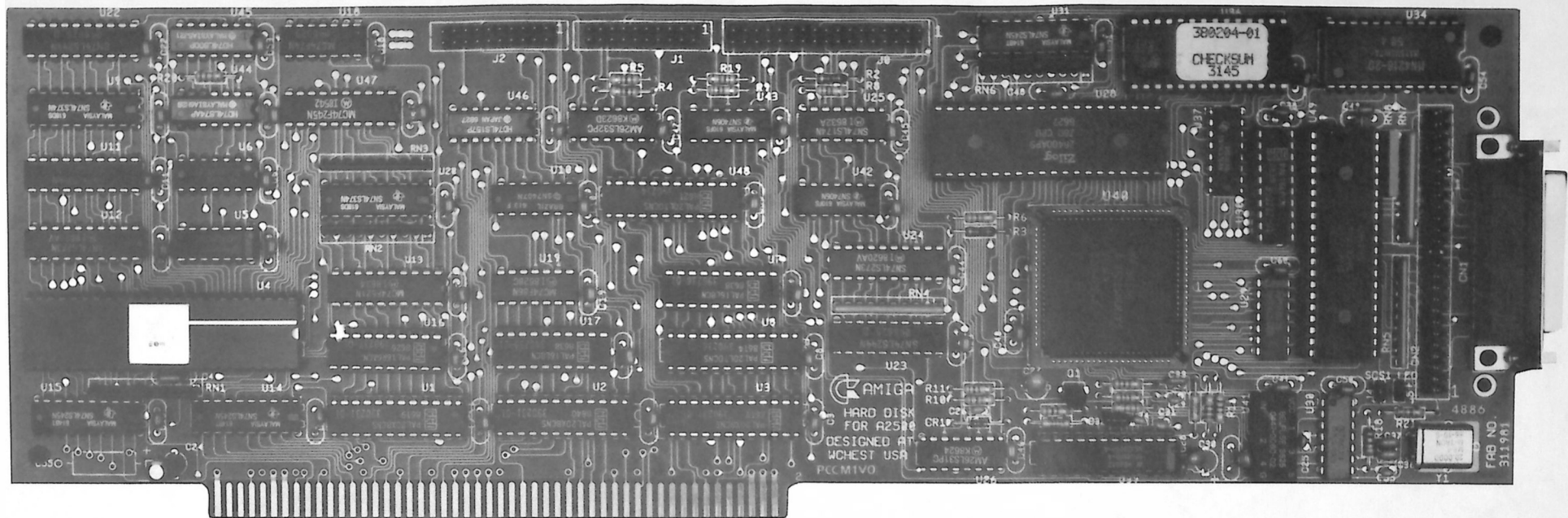
INTEGRATED CIRCUITS			RESISTORS (continued)		
U8	20L10 PAL	390235-01	R14	1.5K	901550-69
U48	20L10 PAL	390234-02	R4,5,16	100	901550-49
U1,2,3	20X8 PAL	390231-01	R13	150	901550-89
U17	16L8 PAL	390233-01	R2,3	620	901550-40
U7	16L8 PAL	390236-01	R8,19,9,1,11	1K	901550-01
U38	16L8 PAL	390232-02	R17	1K 1/8W 1% METAL FILM	390170-05
U16	16R6A PAL	390237-01	R7	2K	901550-53
U14,15,31	74LS245	390001-01	R12	4.75K 1/8W 1% METAL FILM	390170-06
U47	74F245	390089-01	R6,10	10K	901550-20
U44	74LS74A	390097-01	R18	10M	901550-09
U18	74F74	390081-01	R20	1.2K	901550-17
U19	74F86	390198-01	R21	330	901550-14
U10	7407	390002-01	CAPACITORS		
U6	74LS04	901521-02	C1,2,3,5,6-23,28,38-54,56-60	.1MF 50V 20% CERAMIC	900020-01
U5,29	74LS08	901521-03	C4	.33MF .2" 50V 20% CER	900020-09
U4	8727 CBM DMA	315046-01	C26	.001MF 50V 10% CER	900014-02
U13	74F521 8 BIT COMPARATOR	318041-01	C31,29	.01MF 50V 10% CER .1"	900014-03
U9,20	74LS374	901521-43	C33	.022MF 100V 10% MONO/CER .1"	900014-04
U11,22,23	74LS244	901521-13	C30	1MF 35V 10% TANTALUM .1"	900402-13
U24,12	74LS273	390158-01	C27	10MF 20V 10% TANTALUM .1"	900402-09
U34	2016 2K X 8 SRAM 200nS	251637-05	C35	22pF 50V 10% MONO/CER .1"	900019-13
U26	26LS31 DIF TRANS	318040-01	C37,36	39pF 50V 10% MONO/CER .1"	900019-14
U27	26LS32 DIF RECR	318043-01	C32	95pF 300V 1% MICA .1"	900050-27
U39	DP8465N-4 DATA SEP	390207-01	C34	390pF 50V 5% CER .1"	900019-23
U28	Z80A MPU	906150-01	C25	100pF 50V 10% DIP CER .1"	900019-15
U36	2764 EPROM 300nS	390230-02	C24	22µF 25V ELECTROLYTIC RADIAL	390101-04
U40	DJC KONON HDC (84 PIN LCC)	390210-01	MISCELLANEOUS		
U42,43	7406	390004-01	U38,17,16,7	SOCKET 20 PIN	904150-08
U30	74HCU04	318042-01	U36	SOCKET 24 PIN .6 CENTER	904150-04
U37	74LS76	901521-61	U39,1,2	SOCKET 24 PIN .3 CENTER	390060-01
U25	74LS174	390156-01	3,8,48		
U41	DDU-6-60 DELAY LINE	324667-02	U28,49	SOCKET 40 PIN	904150-06
U45	74LS00	901521-01	U4	SOCKET 48 PIN	251313-01
U46	74LS157	901521-11	U40	SOCKET 84 PIN LCC	390185-01
U49	WD33C93 SCSI	390206-01	Y1	CRYSTAL 20 MHz PARALLEL MODE	900556-09
TRANSISTORS			CONNECTORS		
Q1	2N3906	902707-01	J1,2	20 PIN DUAL IN-LINE HEADER	903345-10
DIODES			J0	34 PIN DUAL IN-LINE HEADER	903345-17
CR1	1N914	390017-01	CN1	25 PIN D TYPE CONNECTOR	390241-06
RESISTORS — All are carbon 1/4 watt, 5% unless noted			CN2	50 PIN DUAL IN-LINE HEADER	903345-25
RN1,2,3	1K SIP 10 PIN, PIN 1 COMMON	902410-06	J4,5	2 PIN DUAL IN-LINE HEADER	903345-01
RN6	3.3K SIP 10 PIN, PIN 1 COMMON	902410-06		EXTENSION CARD PANEL	380120-09
RN4,7,5	220/330 10 PIN SIP	380388-04			
RN8	220/330 6 PIN SIP	380388-01			
R15	1.3K	901550-32			

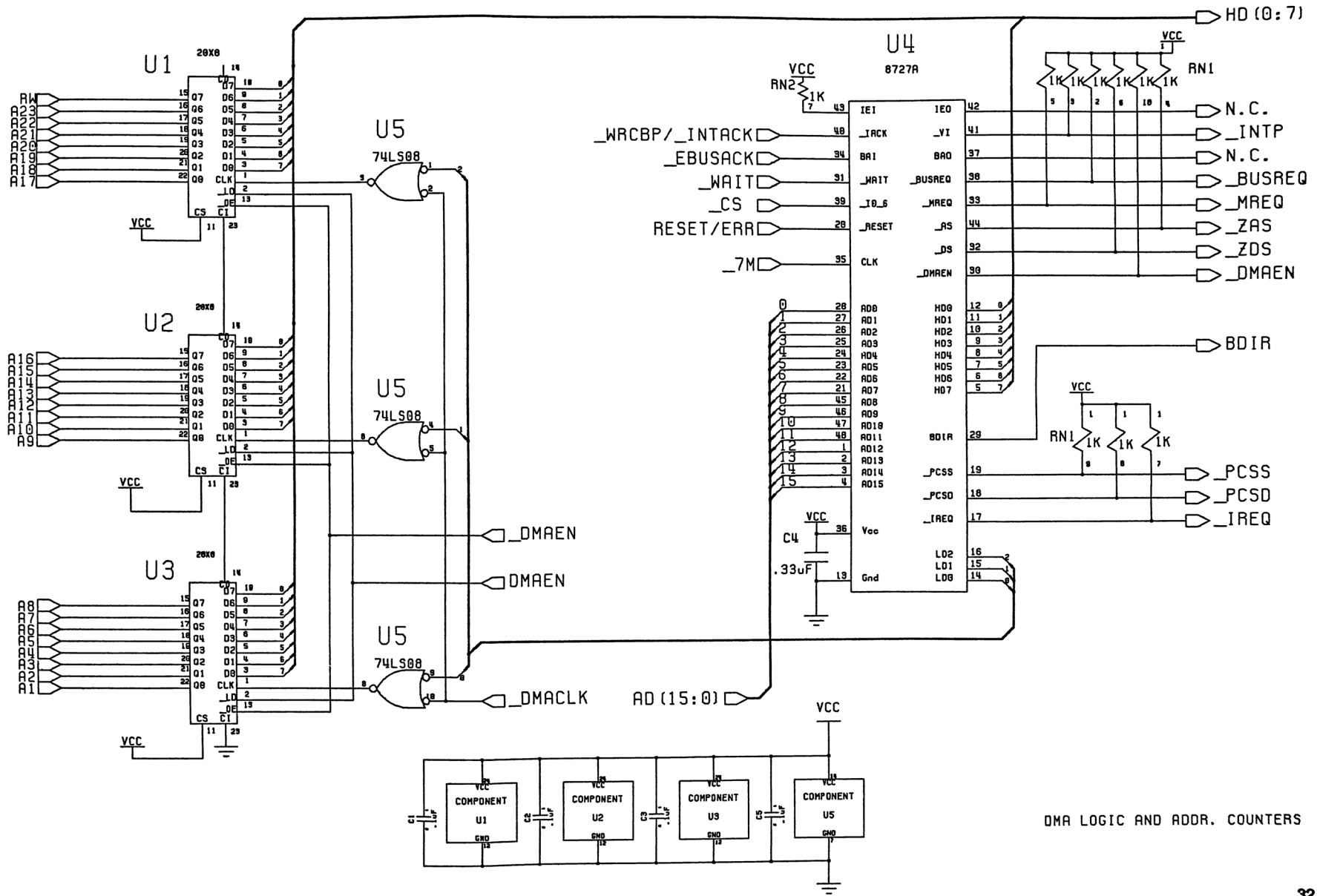


# A2090 HARD DISK CONTROLLER

PCB ASSEMBLY #311979-01

Sheet 1 of 11

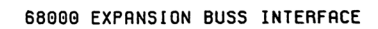


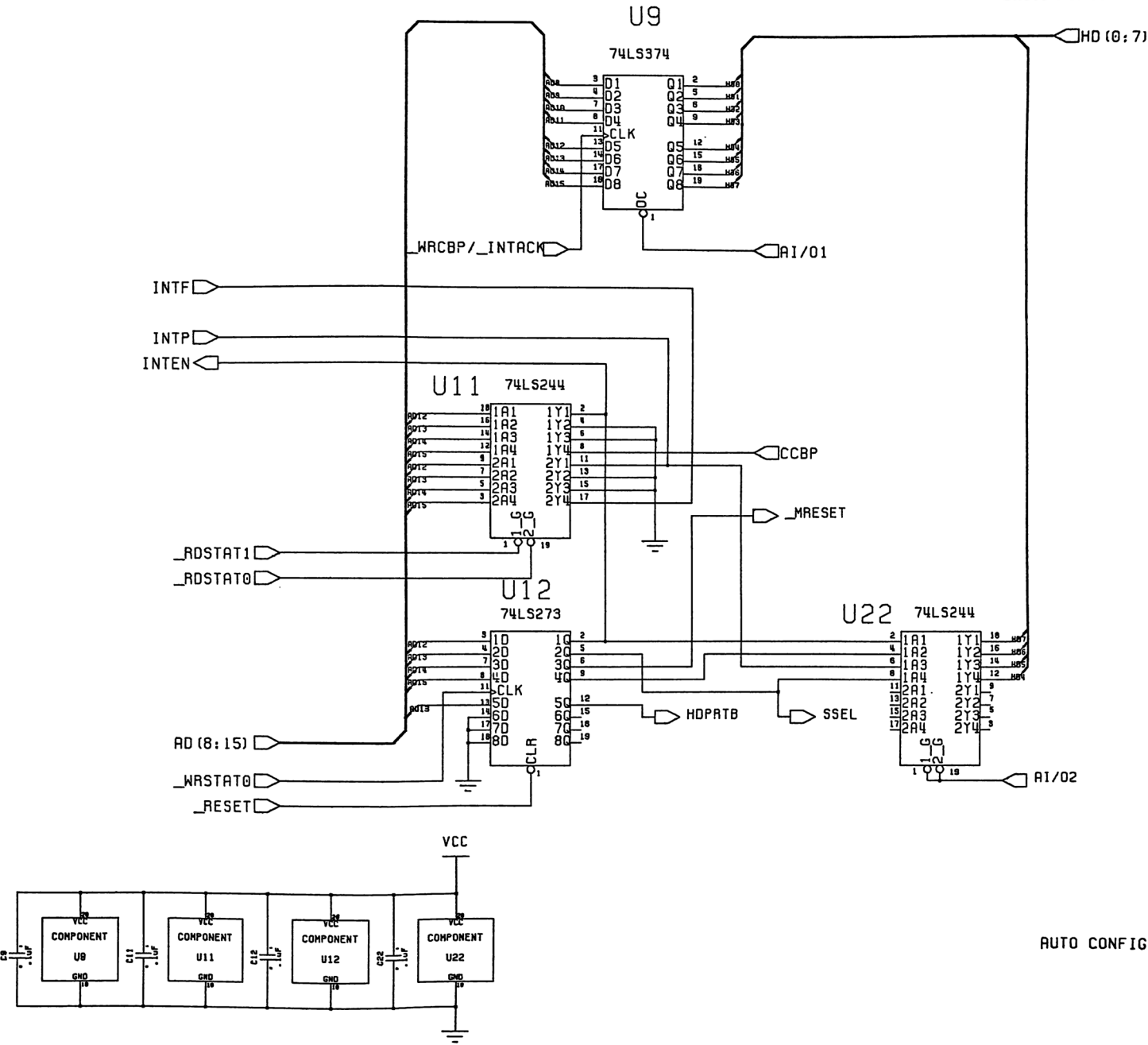


DMA LOGIC AND ADDR. COUNTERS

**Sheet 3 of 11**

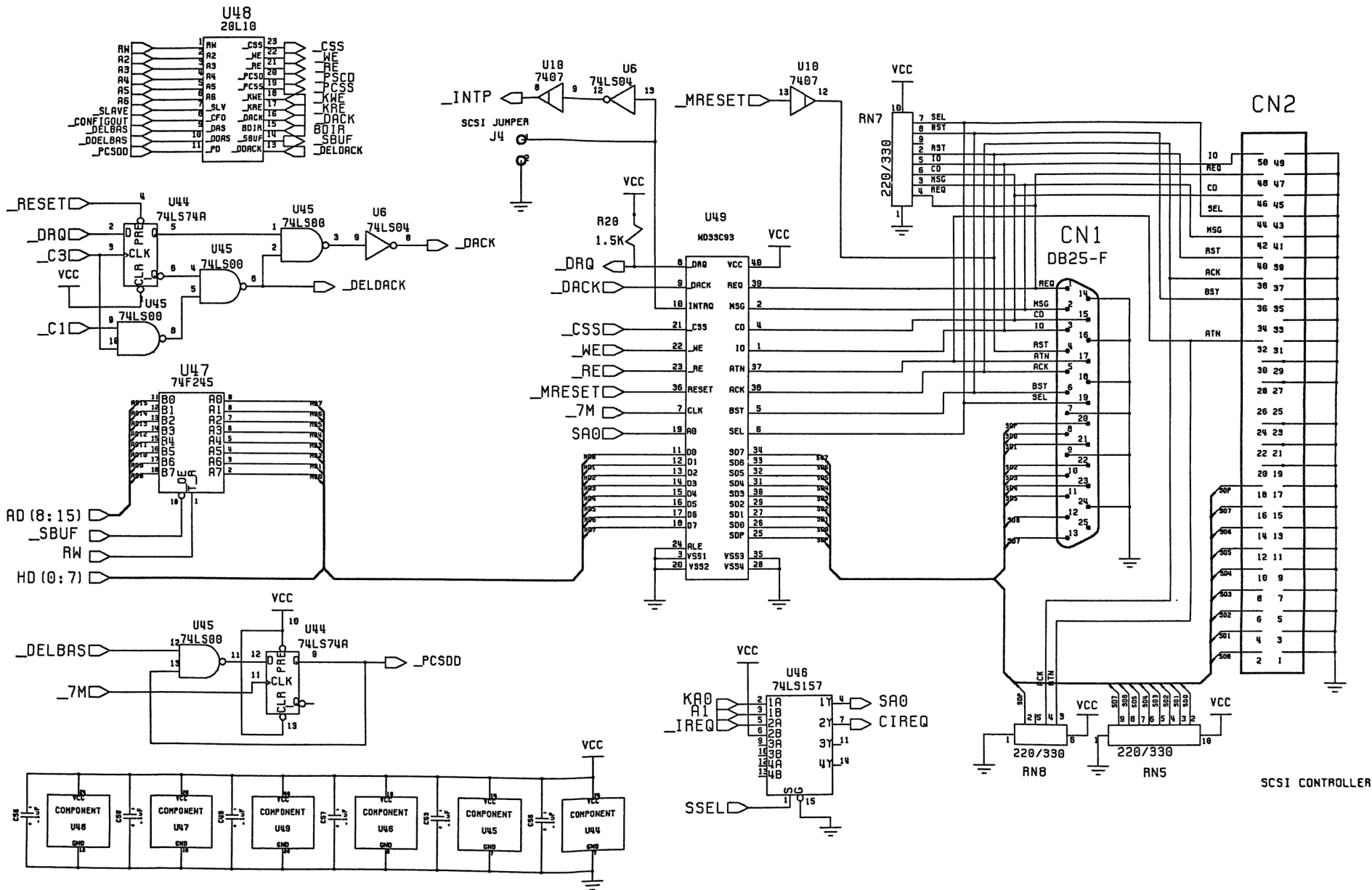
100 PIN EDGE CONN.





**Sheet 5 of 11**





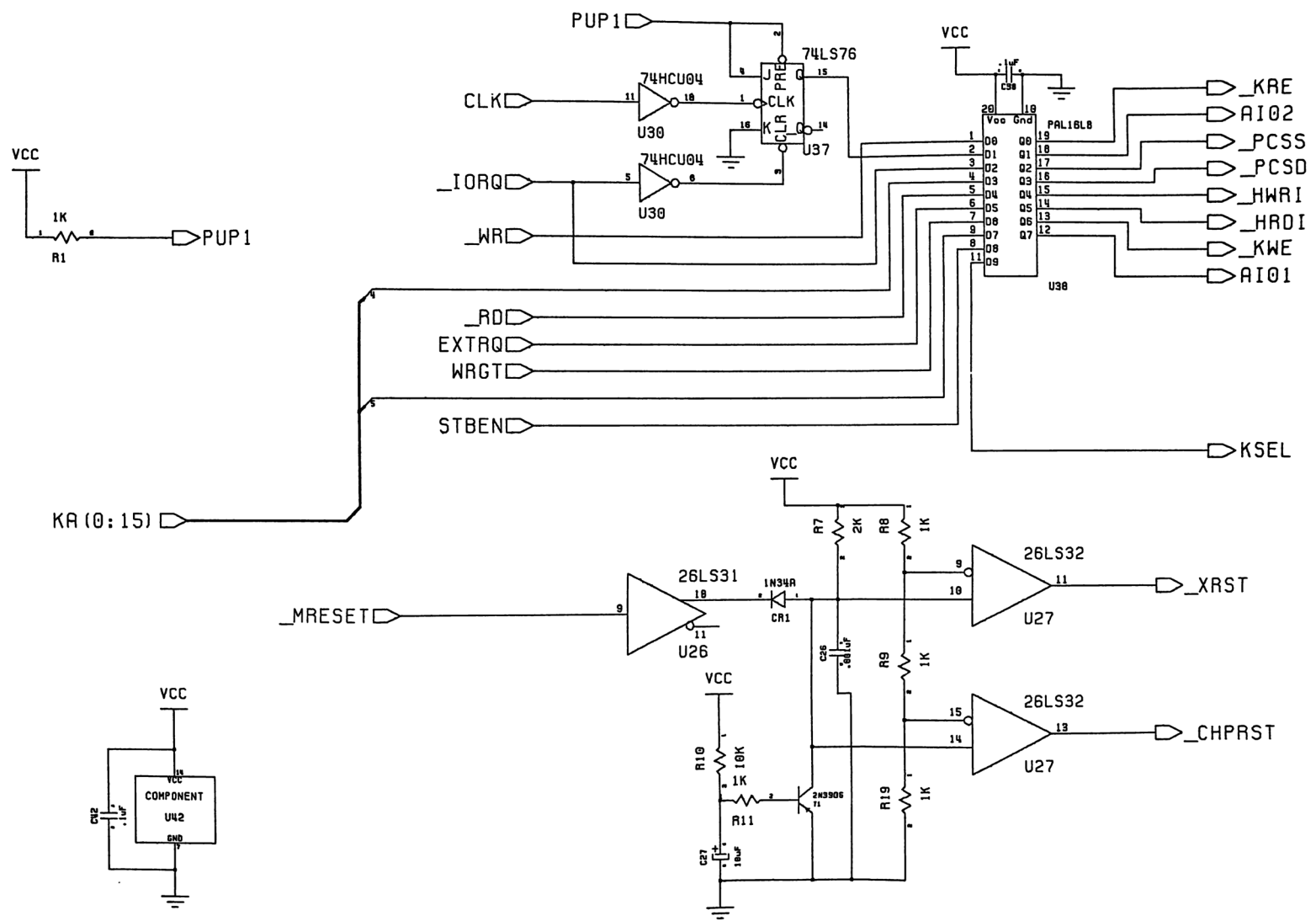
## Sheet 7 of 11



**Sheet 8 of 11**







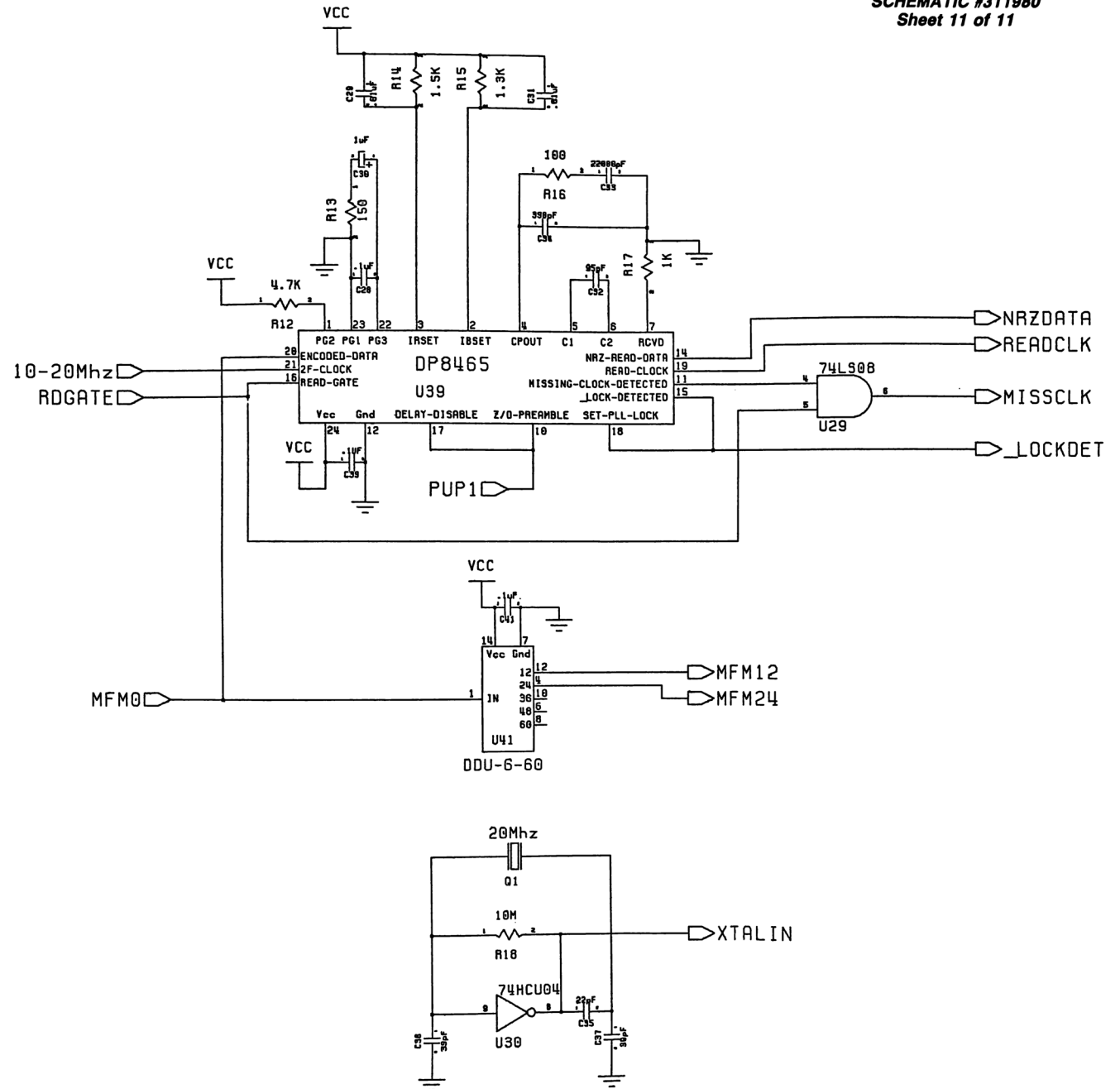
**Sheet 10 of 11**



# A2090 HARD DISK CONTROLLER

SCHEMATIC #311980

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Computer Systems Division  
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West Chester, PA 19380